

**Representative Groups of the 343 Types of
Space-Time Crystallographic Point Groups
with Time Translations and Time Inversion**

Vincent V. Liu^a, Brian K. Vanleeuwen^b, Haricharan Padmanabhan^a, Jason Munro^a, Ismaila Dabo^a, Venkatraman Gopalan^a, & Daniel B. Litvin^c

^aDepartment of Materials Science and Engineering, The Pennsylvania State University, University Park, PA 16801, USA,

^bTwo Sigma Investments, LP, 100 6th Ave, New York, NY 10013, USA, and

^cDepartment of Physics, Eberly College of Science, The Pennsylvania State University, Penn State Berks, PO Box 7009, Reading, PA 19610-6009, USA.

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 1 (1)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 1.1.1.1 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$
]

Group 1.1.2.2 (Class 2 Group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0) \quad (1 \mid 0)'$
]

Group 1.1.3.3 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0) \quad (\bar{1} \mid 0)'$
]

Group 1.1.4.4 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0) \quad (2_{001} \mid 0)'$
]

Group 1.1.5.5 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0) \quad (m_{001} \mid 0)'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 2 (-1)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 2.1.1.6 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0) \quad (\bar{1} \mid 0)$
]

Group 2.1.2.7 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(\bar{1} \mid 0)$ $(1 \mid 0)'$ $(\bar{1} \mid 0)'$
]

Group 2.1.3.8 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(\bar{1} \mid 0)$ $(2_{001} \mid 0)'$ $(m_{001} \mid 0)'$
]

Group 2.2.1.9 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(\bar{1} \mid \frac{1}{2})$
]

Group 2.2.2.10 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(\bar{1} \mid \frac{1}{2})'$
]

Group 2.2.3.11 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(2_{001} \mid 0)'$ $(m_{001} \mid \frac{1}{2})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 3 (2)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 3.1.1.12 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{001} \mid 0)$
]

Group 3.1.2.13 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{001} \mid 0)$ $(1 \mid 0)'$ $(2_{001} \mid 0)'$
]

Group 3.1.3.14 (Class 3
Group): $\{(1 \mid n)\}$
[

(1|0) (2_{0 0 1}|0) ($\bar{1}|0$)' ($m_{0\ 0\ 1}|0$)'

]

Group 3.1.4.15 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}|0) ($2_{0\ 1\ 0}|0$)' ($2_{1\ 0\ 0}|0$)'

]

Group 3.1.5.16 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}|0) ($m_{0\ 1\ 0}|0$)' ($m_{1\ 0\ 0}|0$)'

]

Group 3.1.6.17 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}|0) ($4^{+0\ 0\ 1}|0$)' ($4^{-0\ 0\ 1}|0$)'

]

Group 3.1.7.18 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}|0) ($\bar{4}^{+0\ 0\ 1}|0$)' ($\bar{4}^{-0\ 0\ 1}|0$)'

]

Group 3.2.1.19 (Nonmagnetic spacetime group):

{(1 | n)}

[

(1|0) (2_{0 0 1}| $\frac{1}{2}$)

]

Group 3.2.2.20 (Class 2

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}| $\frac{1}{2}$) (1|0)' ($2_{0\ 0\ 1}| \frac{1}{2}$)'

]

Group 3.2.3.21 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}| $\frac{1}{2}$) ($\bar{1}|0$)' ($m_{0\ 0\ 1}| \frac{1}{2}$)'

]

Group 3.2.4.22 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}| $\frac{1}{2}$) ($2_{0\ 1\ 0}|0$)' ($2_{1\ 0\ 0}| \frac{1}{2}$)'

]

Group 3.2.5.23 (Class 3

Group): {(1 | n)}

[

(1|0) (2_{0 0 1}| $\frac{1}{2}$) ($m_{0\ 1\ 0}|0$)' ($m_{1\ 0\ 0}| \frac{1}{2}$)'

]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 4 (m)

%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 4.1.1.24 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0)           (m0 0 1 | 0)  
]
```

Group 4.1.2.25 (Class 2

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 0)           (1|0)'           (m0 0 1 | 0)'  
]
```

Group 4.1.3.26 (Class 3

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 0)           (20 0 1 | 0)'           (I|0)'  
]
```

Group 4.1.4.27 (Class 3

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 0)           (20 1 0 | 0)'           (m1 0 0 | 0)'  
]
```

Group 4.2.1.28 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0)           (m0 0 1 | 1/2)  
]
```

Group 4.2.2.29 (Class 2

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 1/2)           (1|0)'           (m0 0 1 | 1/2)'  
]
```

Group 4.2.3.30 (Class 3

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 1/2)           (20 0 1 | 0)'           (I|1/2)'  
]
```

Group 4.2.4.31 (Class 3

Group): {(1 | n)}

```
[  
(1|0)           (m0 0 1 | 1/2)           (20 1 0 | 0)'           (m1 0 0 | 1/2)'  
]
```

%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%%

POINT GROUP 5 (2/m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%%

Group 5.1.1.32 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2001|0) (I|0) (m001|0)  
]
```

Group 5.1.2.33 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|0) (m001|0) (1|0)'  
(2001|0)' (I|0)' (m001|0)'  
]
```

Group 5.1.3.34 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|0) (m001|0) (2010|0)'  
(2100|0)' (m010|0)' (m100|0)'  
]
```

Group 5.1.4.35 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|0) (m001|0) (4+001|0)'  
(4-001|0)' (4+001|0)' (4-001|0)'  
]
```

Group 5.2.1.36 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2001|½) (I|0) (m001|½)  
]
```

Group 5.2.2.37 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2001|½) (I|0) (m001|½) (1|0)'  
(2001|½)' (I|0)' (m001|½)'  
]
```

Group 5.2.3.38 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|½)' (I|0) (m001|½) (2010|0)'  
(2100|½)' (m010|0)' (m100|½)'  
]
```

Group 5.3.1.39 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2001|0) (I|½) (m001|½)  
]
```

Group 5.3.2.40 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|½) (m001|½) (1|0)'  
(2001|0)' (I|½)' (m001|½)'  
]
```

Group 5.3.3.41 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|½) (m001|½) (2010|0)'  
(2100|0)' (m010|½)' (m100|½)'  
]
```

Group 5.3.4.42 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|0) (I|½) (m001|½) (4+001|0)'  
(4-001|0)' (4+001|½)' (4-001|½)'  
]
```

Group 5.4.1.43 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2001|½) (I|½) (m001|0)  
]
```

Group 5.4.2.44 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2001|½) (I|½) (m001|0) (1|0)'  
(2001|½)' (I|½)' (m001|0)'  
]
```

Group 5.4.3.45 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2001|½) (I|½) (m001|0) (2010|0)'  
(2100|½)' (m010|½)' (m100|0)'  
]
```

%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 6 (222)

%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 6.1.1.46 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)$
]

Group 6.1.2.47 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)$ $(1 \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$
]

Group 6.1.3.48 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)$ $(\bar{1} \mid 0)'$
 $(m_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid 0)'$
]

Group 6.1.4.49 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)$ $(4^{+0\ 0\ 1} \mid 0)'$
 $(4^{-0\ 0\ 1} \mid 0)'$ $(2_{1\ 1\ 0} \mid 0)'$ $(2_{1\ -1\ 0} \mid 0)'$
]

Group 6.1.5.50 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)$ $(\bar{4}^{+0\ 0\ 1} \mid 0)'$
 $(\bar{4}^{-0\ 0\ 1} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$ $(m_{1\ -1\ 0} \mid 0)'$
]

Group 6.2.1.51 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid \frac{1}{2})$ $(2_{1\ 0\ 0} \mid \frac{1}{2})$
]

Group 6.2.2.52 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid \frac{1}{2})$ $(2_{1\ 0\ 0} \mid \frac{1}{2})$ $(1 \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 1\ 0} \mid \frac{1}{2})'$ $(2_{1\ 0\ 0} \mid \frac{1}{2})'$
]

Group 6.2.3.53 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid \frac{1}{2})$ $(2_{1\ 0\ 0} \mid \frac{1}{2})$ $(\bar{1} \mid 0)'$
 $(m_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ 0\ 0} \mid \frac{1}{2})'$
]

Group 6.2.4.54 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid \frac{1}{2})$ $(2_{1\ 0\ 0} \mid \frac{1}{2})$ $(4^{+0\ 0\ 1} \mid 0)'$
 $(4^{-0\ 0\ 1} \mid 0)'$ $(2_{1\ 1\ 0} \mid \frac{1}{2})'$ $(2_{1\ -1\ 0} \mid \frac{1}{2})'$
]

Group 6.2.5.55 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid \frac{1}{2})$ $(2_{1\ 0\ 0} \mid \frac{1}{2})$ $(\bar{4}_{+0\ 0\ 1} \mid 0)'$
 $(\bar{4}_{-0\ 0\ 1} \mid 0)'$ $(m_{1\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ -1\ 0} \mid \frac{1}{2})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 7 (mm2)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 7.1.1.56 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
]

Group 7.1.2.57 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$ $(1 \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid 0)'$
]

Group 7.1.3.58 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)'$
 $(2_{1\ 0\ 0} \mid 0)'$ $(\bar{1} \mid 0)'$ $(m_{0\ 0\ 1} \mid 0)'$
]

Group 7.1.4.59 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$ $(4_{+0\ 0\ 1} \mid 0)'$
 $(4_{-0\ 0\ 1} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$ $(m_{1\ -1\ 0} \mid 0)'$
]

Group 7.1.5.60 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$ $(2_{1\ 1\ 0} \mid 0)'$
 $(2_{1\ -1\ 0} \mid 0)'$ $(\bar{4}_{+0\ 0\ 1} \mid 0)'$ $(\bar{4}_{-0\ 0\ 1} \mid 0)'$
]

Group 7.2.1.61 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[

(1|0) (2₀₀1|0) (m₀10|½) (m₁00|½)
]

Group 7.2.2.62 (Class 2

Group): {(1 | n)}

[
(1|0) (2₀₀1|0) (m₀10|½) (m₁00|½)'
(2₀₀1|0)' (m₀10|½)' (m₁00|½)'
]

Group 7.2.3.63 (Class 3

Group): {(1 | n)}

[
(1|0) (2₀₀1|0) (m₀10|½) (m₁00|½)' (2₀₁0|0)'
(2₁00|0)' (I|½)' (m₀01|½)'
]

Group 7.2.4.64 (Class 3

Group): {(1 | n)}

[
(1|0) (2₀₀1|0) (m₀10|½)' (m₁00|½)' (4⁺₀₀1|0)'
(4⁻₀₀1|0)' (m₁10|½)' (m₁-10|½)'
]

Group 7.2.5.65 (Class 3

Group): {(1 | n)}

[
(1|0) (2₀₀1|0) (m₀10|½)' (m₁00|½)' (2₁10|0)'
(2₁-10|0)' (4⁺₀₀1|½)' (4⁻₀₀1|½)'
]

Group 7.3.1.66 (Nonmagnetic spacetime group):

{(1 | n)}

[
(1|0) (2₀₀1|½) (m₀10|½) (m₁00|0)
]

Group 7.3.2.67 (Class 2

Group): {(1 | n)}

[
(1|0) (2₀₀1|½) (m₀10|½) (m₁00|0)' (1|0)'
(2₀₀1|½)' (m₀10|½)' (m₁00|0)'
]

Group 7.3.3.68 (Class 3

Group): {(1 | n)}

[
(1|0) (2₀₀1|½) (m₀10|½) (m₁00|0)' (2₀₁0|0)'
(2₁00|½)' (I|½)' (m₀01|0)'
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 8 (mmmm)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 8.1.1.69 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|0) (2_1_0_0|0) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|0) (m_1_0_0|0)  
]
```

Group 8.1.2.70 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|0) (2_1_0_0|0) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|0) (m_1_0_0|0) (2_0_0_1|0)'  
(2_0_1_0|0)' (2_1_0_0|0)' (1̄|0)' (m_0_0_1|0)'  
(m_1_0_0|0)'  
]
```

Group 8.1.3.71 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|0) (2_1_0_0|0) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|0) (m_1_0_0|0) (4_+^0_0_1|0)'  
(2_1_1_0|0)' (2_1_-1_0|0)' (4_-^0_0_1|0)' (m_1_1_0|0)'  
(m_1_-1_0|0)'  
]
```

Group 8.2.1.72 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|½) (2_1_0_0|½) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|½) (m_1_0_0|½)  
]
```

Group 8.2.2.73 (Class 2

```
Group): {(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|½) (2_1_0_0|½) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|½) (m_1_0_0|½) (2_0_0_1|0)'  
(2_0_1_0|½)' (2_1_0_0|½)' (1̄|0)' (m_0_0_1|0)'  
(m_1_0_0|½)'  
]
```

Group 8.2.3.74 (Class 3

```
Group): {(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|½) (2_1_0_0|½) (1̄|0)  
(m_0_0_1|0) (m_0_1_0|½) (m_1_0_0|½) (4_+^0_0_1|0)'  
(2_1_1_0|½)' (2_1_-1_0|½)' (4_-^0_0_1|0)' (m_1_1_0|½)'  
(m_1_-1_0|½)'  
]
```

Group 8.3.1.75 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
(1|0) (2_0_0_1|0) (2_0_1_0|0) (2_1_0_0|0) (1̄|½)  
(m_0_0_1|½) (m_0_1_0|½) (m_1_0_0|½)
```

]

Group 8.3.2.76 (Class 2

Group): $\{(1 \mid n)\}$

```
[  

(1|0) (2001|0) (2010|0) (2100|0) (1|½)  

(m001|½) (m010|½) (m100|½) (1|0)' (2001|0)'  

(2010|0)' (2100|0)' (1|½)' (m001|½)' (m010|½)'  

(m100|½)'  

]
```

Group 8.3.3.77 (Class 3

Group): $\{(1 \mid n)\}$

```
[  

(1|0) (2001|0) (2010|0) (2100|0) (1|½)  

(m001|½) (m010|½) (m100|½) (4+001|0)' (4-001|0)'  

(2110|0)' (21-10|0)' (4+001|½)' (4-001|½)' (m110|½)'  

(m1-10|½)'  

]
```

Group 8.4.1.78 (Nonmagnetic spacetime group):

 $\{(1 \mid n)\}$

```
[  

(1|0) (2001|0) (2010|½) (2100|½) (1|½)  

(m001|½) (m010|0) (m100|0)  

]
```

Group 8.4.2.79 (Class 2

Group): $\{(1 \mid n)\}$

```
[  

(1|0) (2001|0) (2010|½) (2100|½) (1|½)  

(m001|½) (m010|0) (m100|0) (1|0)' (2001|0)'  

(2010|½)' (2100|½)' (1|½)' (m001|½)' (m010|0)'  

(m100|0)'  

]
```

Group 8.4.3.80 (Class 3

Group): $\{(1 \mid n)\}$

```
[  

(1|0) (2001|0) (2010|½) (2100|½) (1|½)  

(m001|½) (m010|0) (m100|0) (4+001|0)' (4-001|0)'  

(2110|½)' (21-10|½)' (4+001|½)' (4-001|½)' (m110|0)'  

(m1-10|0)'  

]
```

```
%%%%%%%%%%%%%%  

%%%%%%%%%%%%%
```

```
%%%%%%%%%%%%%%  

%%%%%%%%%%%%%
```

POINT GROUP 9 (4)

```
%%%%%%%%%%%%%%  

%%%%%%%%%%%%%
```

Group 9.1.1.81 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid 0)$
]

Group 9.1.2.82 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid 0)$ $(1 \mid 0)'$
 $(4^+_{\cdot 0 0 1} \mid 0)'$ $(2_{\cdot 0 0 1} \mid 0)'$ $(4^-_{\cdot 0 0 1} \mid 0)'$
]

Group 9.1.3.83 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid 0)$ $(\bar{1} \mid 0)'$
 $(\bar{4}^+_{\cdot 0 0 1} \mid 0)'$ $(m_{\cdot 0 0 1} \mid 0)'$ $(\bar{4}^-_{\cdot 0 0 1} \mid 0)'$
]

Group 9.1.4.84 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 1 0} \mid 0)'$
 $(2_{\cdot 1 0 0} \mid 0)'$ $(2_{\cdot 1 1 0} \mid 0)'$ $(2_{\cdot 1 -1 0} \mid 0)'$
]

Group 9.1.5.85 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid 0)$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid 0)$ $(m_{\cdot 0 1 0} \mid 0)'$
 $(m_{\cdot 1 0 0} \mid 0)'$ $(m_{\cdot 1 1 0} \mid 0)'$ $(m_{\cdot 1 -1 0} \mid 0)'$
]

Group 9.2.1.86 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid \frac{1}{2})$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid \frac{1}{2})$
]

Group 9.2.2.87 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid \frac{1}{2})$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid \frac{1}{2})$ $(1 \mid 0)'$
 $(4^+_{\cdot 0 0 1} \mid \frac{1}{2})'$ $(2_{\cdot 0 0 1} \mid 0)'$ $(4^-_{\cdot 0 0 1} \mid \frac{1}{2})'$
]

Group 9.2.3.88 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid \frac{1}{2})$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid \frac{1}{2})$ $(\bar{1} \mid 0)'$
 $(\bar{4}^+_{\cdot 0 0 1} \mid \frac{1}{2})'$ $(m_{\cdot 0 0 1} \mid 0)'$ $(\bar{4}^-_{\cdot 0 0 1} \mid \frac{1}{2})'$
]

Group 9.2.4.89 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(4^+_{\cdot 0 0 1} \mid \frac{1}{2})$ $(2_{\cdot 0 0 1} \mid 0)$ $(4^-_{\cdot 0 0 1} \mid \frac{1}{2})$ $(2_{\cdot 0 1 0} \mid 0)'$
 $(2_{\cdot 1 0 0} \mid 0)'$ $(2_{\cdot 1 1 0} \mid \frac{1}{2})'$ $(2_{\cdot 1 -1 0} \mid \frac{1}{2})'$
]

Group 9.2.5.90 (Class 3
Group): $\{(1 \mid n)\}$

[
 $(1|0)$ $(4^+_{001}|\frac{1}{2})$ $(2_{001}|0)$ $(4^-_{001}|\frac{1}{2})$ $(m_{010}|0)'$
 $(m_{100}|0)'$ $(m_{110}|\frac{1}{2})'$ $(m_{1-10}|\frac{1}{2})'$]

Group 9.3.1.91 (Nonmagnetic spacetime group):

$\{(1|n)\}$

[
 $(1|0)$ $(4^+_{001}|\frac{1}{4})$ $(2_{001}|\frac{1}{2})$ $(4^-_{001}|\frac{3}{4})$
]

Group 9.3.2.92 (Class 3

Group): $\{(1|n)\}$

[
 $(1|0)$ $(4^+_{001}|\frac{1}{4})$ $(2_{001}|\frac{1}{2})$ $(4^-_{001}|\frac{3}{4})$ $(2_{010}|0)'$
 $(2_{100}|\frac{1}{2})'$ $(2_{110}|\frac{3}{4})'$ $(2_{1-10}|\frac{1}{4})'$
]

Group 9.3.3.93 (Class 3

Group): $\{(1|n)\}$

[
 $(1|0)$ $(4^+_{001}|\frac{1}{4})$ $(2_{001}|\frac{1}{2})$ $(4^-_{001}|\frac{3}{4})$ $(m_{010}|0)'$
 $(m_{100}|\frac{1}{2})'$ $(m_{110}|\frac{3}{4})'$ $(m_{1-10}|\frac{1}{4})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 10 (-4)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 10.1.1.94 (Nonmagnetic spacetime group):

$\{(1|n)\}$

[
 $(1|0)$ $(2_{001}|0)$ $(\bar{4}^+_{001}|0)$ $(\bar{4}^-_{001}|0)$
]

Group 10.1.2.95 (Class 2

Group): $\{(1|n)\}$

[
 $(1|0)$ $(2_{001}|0)$ $(\bar{4}^+_{001}|0)$ $(\bar{4}^-_{001}|0)$ $(1|0)'$
 $(2_{001}|0)'$ $(\bar{4}^+_{001}|0)'$ $(\bar{4}^-_{001}|0)'$
]

Group 10.1.3.96 (Class 3

Group): $\{(1|n)\}$

[
 $(1|0)$ $(2_{001}|0)$ $(\bar{4}^+_{001}|0)$ $(\bar{4}^-_{001}|0)$ $(4^+_{001}|0)'$
 $(4^-_{001}|0)'$ $(\bar{1}|0)'$ $(m_{001}|0)'$
]

Group 10.1.4.97 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid 0)$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid 0)$ $(2_{0\ 1\ 0} \mid 0)'$
 $(2_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$ $(m_{1\ -1\ 0} \mid 0)'$
]

Group 10.2.1.98 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{1}{2})$
]

Group 10.2.2.99 (Class 2
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(1 \mid 0)'$
 $(2_{0\ 1\ 0} \mid 0)'$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{2})'$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{1}{2})'$
]

Group 10.2.3.100 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(4^{+}\ 0\ 0\ 1 \mid 0)'$
 $(4^{-}\ 0\ 0\ 1 \mid 0)'$ $(\bar{I} \mid \frac{1}{2})'$ $(m_{0\ 0\ 1} \mid \frac{1}{2})'$
]

Group 10.2.4.101 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{1}{2})$ $(2_{0\ 1\ 0} \mid 0)'$
 $(2_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ -1\ 0} \mid \frac{1}{2})'$
]

Group 10.3.1.102 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{4})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{3}{4})$
]

Group 10.3.2.103 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^{+}\ 0\ 0\ 1 \mid \frac{1}{4})$ $(\bar{4}^{-}\ 0\ 0\ 1 \mid \frac{3}{4})$ $(2_{0\ 1\ 0} \mid 0)'$
 $(2_{1\ 0\ 0} \mid \frac{1}{2})'$ $(m_{1\ 1\ 0} \mid \frac{3}{4})'$ $(m_{1\ -1\ 0} \mid \frac{1}{4})'$
]

%%%%%%%%%%%%%%
 %%%%%%%%%%%%%%

POINT GROUP 11 (4/m)

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

Group 11.1.1.104 (Nonmagnetic spacetime group):

{(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|0)$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|0)$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|0)$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|0)$
]

Group 11.1.2.105 (Class 2

Group): {(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|0)$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|0)$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|0)$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|0)$ $(1|0)'$ $(4^+_{0\ 0\ 1}|0)'$
 $(2_{0\ 0\ 1}|0)'$ $(4^-_{0\ 0\ 1}|0)'$ $(\bar{1}|0)'$ $(\bar{4}^+_{0\ 0\ 1}|0)'$ $(m_{0\ 0\ 1}|0)'$
 $(\bar{4}^-_{0\ 0\ 1}|0)'$
]

Group 11.1.3.106 (Class 3

Group): {(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|0)$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|0)$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|0)$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|0)$ $(2_{0\ 1\ 0}|0)'$ $(2_{1\ 0\ 0}|0)'$
 $(2_{1\ 1\ 0}|0)'$ $(2_{1\ -1\ 0}|0)'$ $(m_{0\ 1\ 0}|0)'$ $(m_{1\ 0\ 0}|0)'$ $(m_{1\ 1\ 0}|0)'$
 $(m_{1\ -1\ 0}|0)'$
]

Group 11.2.1.107 (Nonmagnetic spacetime group):

{(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|\frac{1}{2})$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|\frac{1}{2})$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|\frac{1}{2})$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|\frac{1}{2})$
]

Group 11.2.2.108 (Class 2

Group): {(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|\frac{1}{2})$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|\frac{1}{2})$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|\frac{1}{2})$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|\frac{1}{2})$ $(1|0)'$ $(4^+_{0\ 0\ 1}|\frac{1}{2})'$
 $(2_{0\ 0\ 1}|0)'$ $(4^-_{0\ 0\ 1}|\frac{1}{2})'$ $(\bar{1}|0)'$ $(\bar{4}^+_{0\ 0\ 1}|\frac{1}{2})'$ $(m_{0\ 0\ 1}|0)'$
 $(\bar{4}^-_{0\ 0\ 1}|\frac{1}{2})'$
]

Group 11.2.3.109 (Class 3

Group): {(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|\frac{1}{2})$ $(2_{0\ 0\ 1}|0)$ $(4^-_{0\ 0\ 1}|\frac{1}{2})$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|\frac{1}{2})$ $(m_{0\ 0\ 1}|0)$ $(\bar{4}^-_{0\ 0\ 1}|\frac{1}{2})$ $(2_{0\ 1\ 0}|0)'$ $(2_{1\ 0\ 0}|0)'$
 $(2_{1\ 1\ 0}|\frac{1}{2})'$ $(2_{1\ -1\ 0}|\frac{1}{2})'$ $(m_{0\ 1\ 0}|0)'$ $(m_{1\ 0\ 0}|0)'$ $(m_{1\ 1\ 0}|\frac{1}{2})'$
 $(m_{1\ -1\ 0}|\frac{1}{2})'$
]

Group 11.3.1.110 (Nonmagnetic spacetime group):

{(1 | n)}

[
 $(1|0)$ $(4^+_{0\ 0\ 1}|\frac{1}{4})$ $(2_{0\ 0\ 1}|\frac{1}{2})$ $(4^-_{0\ 0\ 1}|\frac{3}{4})$ $(\bar{1}|0)$
 $(\bar{4}^+_{0\ 0\ 1}|\frac{1}{4})$ $(m_{0\ 0\ 1}|\frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1}|\frac{3}{4})$
]

Group 11.3.2.111 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(4^-_{0\ 0\ 1} \mid \frac{3}{4})$ $(\bar{1} \mid 0)$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{3}{4})$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid \frac{1}{2})'$
 $(2_{1\ 1\ 0} \mid \frac{3}{4})'$ $(2_{1\ -1\ 0} \mid \frac{1}{2})'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid \frac{1}{2})'$ $(m_{1\ 1\ 0} \mid \frac{3}{4})'$
]

Group 11.4.1.112 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{2})$
]

Group 11.4.2.113 (Class 2
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(4^+_{0\ 0\ 1} \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(4^-_{0\ 0\ 1} \mid 0)'$ $(\bar{1} \mid \frac{1}{2})'$ $(\bar{4}^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(m_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{2})'$
]

Group 11.4.3.114 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$
 $(2_{1\ 1\ 0} \mid 0)'$ $(2_{1\ -1\ 0} \mid 0)'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ 0\ 0} \mid \frac{1}{2})'$ $(m_{1\ 1\ 0} \mid \frac{1}{2})'$
]

Group 11.5.1.115 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid 0)$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid 0)$
]

Group 11.5.2.116 (Class 2
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid 0)$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid 0)$ $(1 \mid 0)'$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(4^-_{0\ 0\ 1} \mid \frac{1}{2})'$ $(\bar{1} \mid \frac{1}{2})'$ $(\bar{4}^+_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(\bar{4}^-_{0\ 0\ 1} \mid 0)'$
]

Group 11.5.3.117 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid 0)$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{4}^-_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$
 $(2_{1\ 1\ 0} \mid \frac{1}{2})'$ $(2_{1\ -1\ 0} \mid \frac{1}{2})'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ 0\ 0} \mid \frac{1}{2})'$ $(m_{1\ 1\ 0} \mid 0)'$
]

Group 11.6.1.118 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{4})$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(4^-_{0\ 0\ 1} \mid \frac{3}{4})$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{3}{4})$ $(m_{0\ 0\ 1} \mid 0)$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{4})$
]

Group 11.6.2.119 (Class 3 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{4})$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(4^-_{0\ 0\ 1} \mid \frac{3}{4})$ $(\bar{1} \mid \frac{1}{2})$
 $(\bar{4}^+_{0\ 0\ 1} \mid \frac{3}{4})$ $(m_{0\ 0\ 1} \mid 0)$ $(\bar{4}^-_{0\ 0\ 1} \mid \frac{1}{4})$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid \frac{1}{2})'$
 $(2_{1\ 1\ 0} \mid \frac{3}{4})'$ $(2_{1\ -1\ 0} \mid \frac{1}{4})'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ 0\ 0} \mid 0)'$
 $(m_{1\ -1\ 0} \mid \frac{3}{4})'$]

%%%%%%%%%%%%%%
 %%%%%%%%%%%%%%

POINT GROUP 12 (422)
 %%%%%%%%%%%%%%
 %%%%%%%%%%%%%%

Group 12.1.1.120 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$
 $(2_{1\ 0\ 0} \mid 0)$ $(2_{1\ 1\ 0} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)$
]

Group 12.1.2.121 (Class 2 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$
 $(2_{1\ 0\ 0} \mid 0)$ $(2_{1\ 1\ 0} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)$ $(1 \mid 0)'$ $(4^+_{0\ 0\ 1} \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(4^-_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$
 $(2_{1\ -1\ 0} \mid 0)'$
]

Group 12.1.3.122 (Class 3 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)$
 $(2_{1\ 0\ 0} \mid 0)$ $(2_{1\ 1\ 0} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)$ $(\bar{1} \mid 0)'$ $(\bar{4}^+_{0\ 0\ 1} \mid 0)'$
 $(m_{0\ 0\ 1} \mid 0)'$ $(\bar{4}^-_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid 0)'$
 $(m_{1\ -1\ 0} \mid 0)'$
]

Group 12.2.1.123 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(4^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 0\ 1} \mid 0)$ $(4^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(2_{0\ 1\ 0} \mid 0)$
]

$(2_1 0_0 0)$	$(2_1 1_0 \frac{1}{2})$	$(2_{1-1} 0 \frac{1}{2})$
-----------------	---------------------------	-----------------------------

]

Group 12.2.2.124 (Class 2)
Group): $\{(1 | n)\}$
[
 $(1 | 0)$ $(4^+ 0_0 1 | \frac{1}{2})$ $(2_0 0_1 | 0)$ $(4^- 0_0 1 | \frac{1}{2})$ $(2_0 1_0 | 0)$
 $(2_1 0_0 | 0)$ $(2_1 1_0 | \frac{1}{2})$ $(2_{1-1} 0 | \frac{1}{2})$ $(1 | 0)'$ $(4^+ 0_0 1 | \frac{1}{2})'$
 $(2_0 0_1 | 0)'$ $(4^- 0_0 1 | \frac{1}{2})'$ $(2_0 1_0 | 0)'$ $(2_1 0_0 | 0)'$ $(2_1 1_0 | \frac{1}{2})'$
 $(2_{1-1} 0 | \frac{1}{2})'$
]

Group 12.2.3.125 (Class 3)
Group): $\{(1 | n)\}$
[
 $(1 | 0)$ $(4^+ 0_0 1 | \frac{1}{2})$ $(2_0 0_1 | 0)$ $(4^- 0_0 1 | \frac{1}{2})$ $(2_0 1_0 | 0)$
 $(2_1 0_0 | 0)$ $(2_1 1_0 | \frac{1}{2})$ $(2_{1-1} 0 | \frac{1}{2})$ $(\bar{1} | 0)'$ $(\bar{4}^+ 0_0 1 | \frac{1}{2})'$
 $(m_0 0_1 | 0)'$ $(\bar{4}^- 0_0 1 | \frac{1}{2})'$ $(m_0 1_0 | 0)'$ $(m_1 0_0 | 0)'$ $(m_1 1_0 | \frac{1}{2})'$
 $(m_{1-1} 0 | \frac{1}{2})'$
]

Group 12.3.1.126 (Nonmagnetic spacetime group):
 $\{(1 | n)\}$
[
 $(1 | 0)$ $(4^+ 0_0 1 | 0)$ $(2_0 0_1 | 0)$ $(4^- 0_0 1 | 0)$ $(2_0 1_0 | \frac{1}{2})$
 $(2_1 0_0 | \frac{1}{2})$ $(2_1 1_0 | \frac{1}{2})$ $(2_{1-1} 0 | \frac{1}{2})$
]

Group 12.3.2.127 (Class 2)
Group): $\{(1 | n)\}$
[
 $(1 | 0)$ $(4^+ 0_0 1 | 0)$ $(2_0 0_1 | 0)$ $(4^- 0_0 1 | 0)$ $(2_0 1_0 | \frac{1}{2})$
 $(2_1 0_0 | \frac{1}{2})$ $(2_1 1_0 | \frac{1}{2})$ $(2_{1-1} 0 | \frac{1}{2})$ $(1 | 0)'$ $(4^+ 0_0 1 | 0)'$
 $(2_0 0_1 | 0)'$ $(4^- 0_0 1 | 0)'$ $(2_0 1_0 | \frac{1}{2})'$ $(2_1 0_0 | \frac{1}{2})'$ $(2_1 1_0 | \frac{1}{2})'$
 $(2_{1-1} 0 | \frac{1}{2})'$
]

Group 12.3.3.128 (Class 3)
Group): $\{(1 | n)\}$
[
 $(1 | 0)$ $(4^+ 0_0 1 | 0)$ $(2_0 0_1 | 0)$ $(4^- 0_0 1 | 0)$ $(2_0 1_0 | \frac{1}{2})$
 $(2_1 0_0 | \frac{1}{2})$ $(2_1 1_0 | \frac{1}{2})$ $(2_{1-1} 0 | \frac{1}{2})$ $(\bar{1} | 0)'$ $(\bar{4}^+ 0_0 1 | 0)'$
 $(m_0 0_1 | 0)'$ $(\bar{4}^- 0_0 1 | 0)'$ $(m_0 1_0 | \frac{1}{2})'$ $(m_1 0_0 | \frac{1}{2})'$ $(m_1 1_0 | \frac{1}{2})'$
 $(m_{1-1} 0 | \frac{1}{2})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 13 (4mm)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 13.1.1.129 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (4+001|0)           (2001|0)           (4-001|0)           (m010|0)
(m100|0)       (m110|0)           (m1-10|0)
]
```

Group 13.1.2.130 (Class 2

Group): {(1 | n)}

```
[
(1|0)           (4+001|0)           (2001|0)           (4-001|0)           (m010|0)
(m100|0)       (m110|0)           (m1-10|0)         (1|0)'
(2001|0)'       (4-001|0)'          (m010|0)'          (m100|0)'
(m1-10|0)'
]
```

Group 13.1.3.131 (Class 3

Group): {(1 | n)}

```
[
(1|0)           (4+001|0)           (2001|0)           (4-001|0)           (m010|0)
(m100|0)       (m110|0)           (m1-10|0)         (2010|0)'
(2110|0)'       (21-10|0)'          (I|0)'             (4+001|0)'          (m001|0)'
(4-001|0)'
]
```

Group 13.2.1.132 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (4+001|½)           (2001|0)           (4-001|½)           (m010|0)
(m100|0)       (m110|½)           (m1-10|½)
]
```

Group 13.2.2.133 (Class 2

Group): {(1 | n)}

```
[
(1|0)           (4+001|½)           (2001|0)           (4-001|½)           (m010|0)
(m100|0)       (m110|½)           (m1-10|½)         (1|0)'
(2001|0)'       (4-001|½)'          (m010|0)'          (m100|0)'
(m1-10|½)'
]
```

Group 13.2.3.134 (Class 3

Group): {(1 | n)}

```
[
(1|0)           (4+001|½)           (2001|0)           (4-001|½)           (m010|0)
(m100|0)       (m110|½)           (m1-10|½)         (2010|0)'
(2110|½)'       (21-10|½)'          (I|0)'             (4+001|½)'          (m001|0)'
(4-001|½)'
]
```

Group 13.3.1.135 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (4+001|0)           (2001|0)           (4-001|0)           (m010|½)
(m100|½)
]
```

Group 13.3.2.136 (Class 2

Group): {(1 | n)}

```
[
```

$(1 0)$	$(4^+_{001} 0)$	$(2_{001} 0)$	$(4^-_{001} 0)$	$(m_{010} \frac{1}{2})$
$(m_{100} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$	$(1 0)'$	$(4^+_{001} 0)'$
$(2_{001} 0)'$	$(4^-_{001} 0)'$	$(m_{010} \frac{1}{2})'$	$(m_{100} \frac{1}{2})'$	$(m_{110} \frac{1}{2})'$
$(m_{1-10} \frac{1}{2})'$				
]				

Group 13.3.3.137 (Class 3

Group): $\{(1 | n)\}$

$(1 0)$	$(4^+_{001} 0)$	$(2_{001} 0)$	$(4^-_{001} 0)$	$(m_{010} \frac{1}{2})$
$(m_{100} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$	$(2_{010} 0)'$	$(2_{100} 0)'$
$(2_{110} 0)'$	$(2_{1-10} 0)'$	$(\bar{1} \frac{1}{2})'$	$(\bar{4}^+_{001} \frac{1}{2})'$	$(m_{001} \frac{1}{2})'$
$(\bar{4}^-_{001} \frac{1}{2})'$				
]				

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 14 (-42m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 14.1.1.138 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(2_{001} 0)$	$(2_{010} 0)$	$(2_{100} 0)$	$(\bar{4}^+_{001} 0)$
$(\bar{4}^-_{001} 0)$	$(m_{110} 0)$	$(m_{1-10} 0)$		
]				

Group 14.1.2.139 (Class 2

Group): $\{(1 | n)\}$

$(1 0)$	$(2_{001} 0)$	$(2_{010} 0)$	$(2_{100} 0)$	$(\bar{4}^+_{001} 0)$
$(\bar{4}^-_{001} 0)$	$(m_{110} 0)$	$(m_{1-10} 0)$	$(1 0)'$	$(2_{001} 0)'$
$(2_{010} 0)'$	$(2_{100} 0)'$	$(\bar{4}^+_{001} 0)'$	$(\bar{4}^-_{001} 0)'$	$(m_{110} 0)'$
$(m_{1-10} 0)'$				
]				

Group 14.1.3.140 (Class 3

Group): $\{(1 | n)\}$

$(1 0)$	$(2_{001} 0)$	$(2_{010} 0)$	$(2_{100} 0)$	$(\bar{4}^+_{001} 0)$
$(\bar{4}^-_{001} 0)$	$(m_{110} 0)$	$(m_{1-10} 0)$	$(4^+_{001} 0)'$	$(4^-_{001} 0)'$
$(2_{110} 0)'$	$(2_{1-10} 0)'$	$(\bar{1} 0)'$	$(m_{001} 0)'$	$(m_{010} 0)'$
$(m_{100} 0)'$				
]				

Group 14.2.1.141 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(2_{001} 0)$	$(2_{010} 0)$	$(2_{100} 0)$	$(\bar{4}^+_{001} \frac{1}{2})$
$(\bar{4}^-_{001} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$		
]				

]

Group 14.2.2.142 (Class 2

Group): {(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|0)          (2_1_0_0|0)          (4^+_0_0_1|½)  

(4^-_0_0_1|½)  (m_1_1_0|½)        (m_1_-1_0|½)        (1|0)'           (2_0_0_1|0)'  

(2_0_1_0|0)'   (2_1_0_0|0)'       (4^+_0_0_1|½)'       (4^-_0_0_1|½)'       (m_1_1_0|½)'  

(m_1_-1_0|½)' ]
```

Group 14.2.3.143 (Class 3

Group): {(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|0)          (2_1_0_0|0)          (4^+_0_0_1|½)  

(4^-_0_0_1|½)  (m_1_1_0|½)        (m_1_-1_0|½)        (4^+_0_0_1|0)'       (4^-_0_0_1|0)'  

(2_1_1_0|0)'   (2_1_-1_0|0)'       (1|½)'           (m_0_0_1|½)'       (m_0_1_0|½)'  

(m_1_0_0|½)' ]
```

Group 14.3.1.144 (Nonmagnetic spacetime group):

{(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|½)          (2_1_0_0|½)          (4^+_0_0_1|½)  

(4^-_0_0_1|½)  (m_1_1_0|0)        (m_1_-1_0|0)        (m_1_1_0|0)        (m_1_1_0|0)'  

]
```

Group 14.3.2.145 (Class 2

Group): {(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|½)          (2_1_0_0|½)          (4^+_0_0_1|½)  

(4^-_0_0_1|½)  (m_1_1_0|0)        (m_1_-1_0|0)        (1|0)'           (2_0_0_1|0)'  

(2_0_1_0|½)'   (2_1_0_0|½)'       (4^+_0_0_1|½)'       (4^-_0_0_1|½)'       (m_1_1_0|0)'  

(m_1_-1_0|0)' ]
```

Group 14.3.3.146 (Class 3

Group): {(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|½)          (2_1_0_0|½)          (4^+_0_0_1|½)  

(4^-_0_0_1|½)  (m_1_1_0|0)        (m_1_-1_0|0)        (4^+_0_0_1|0)'       (4^-_0_0_1|0)'  

(2_1_1_0|½)'   (2_1_-1_0|½)'       (1|½)'           (m_0_0_1|½)'       (m_0_1_0|0)'  

(m_1_0_0|0)' ]
```

Group 14.4.1.147 (Nonmagnetic spacetime group):

{(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|½)          (2_1_0_0|½)          (4^+_0_0_1|0)  

(4^-_0_0_1|0)  (m_1_1_0|½)        (m_1_-1_0|½)        (m_1_1_0|½)        ]
```

Group 14.4.2.148 (Class 2

Group): {(1 | n)}

```
[  

(1|0)          (2_0_0_1|0)          (2_0_1_0|½)          (2_1_0_0|½)          (4^+_0_0_1|0)  

(4^-_0_0_1|0)  (m_1_1_0|½)        (m_1_-1_0|½)        (1|0)'           (2_0_0_1|0)'  

(2_0_1_0|½)'   (2_1_0_0|½)'       (4^+_0_0_1|0)'       (4^-_0_0_1|0)'       (m_1_1_0|½)'  

(m_1_-1_0|½)' ]
```

Group 14.4.3.149 (Class 3

Group): {(1 | n)}

[
(1|0) (2_0_0_1|0) (2_0_1_0|½) (2_1_0_0|½) (4_+^0_0_1|0)
(4_-^0_0_1|0) (m_1_1_0|½) (m_1_-1_0|½) (4_+^0_0_1|0)' (4_-^0_0_1|0)'
(2_1_1_0|½)' (2_1_-1_0|½)' (I|0)' (m_0_0_1|0)' (m_0_1_0|½)'
(m_1_0_0|½)'
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 15 (4/mmm)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 15.1.1.150 (Nonmagnetic spacetime group):

{(1 | n)}

[
(1|0) (4_+^0_0_1|0) (2_0_0_1|0) (4_-^0_0_1|0) (2_0_1_0|0)
(2_1_0_0|0) (2_1_1_0|0) (2_1_-1_0|0) (I|0) (4_+^0_0_1|0)
(m_0_0_1|0) (4_-^0_0_1|0) (m_0_1_0|0) (m_1_0_0|0) (m_1_1_0|0)
(m_1_-1_0|0)
]

Group 15.1.2.151 (Class 2

Group): {(1 | n)}

[
(1|0) (4_+^0_0_1|0) (2_0_0_1|0) (4_-^0_0_1|0) (2_0_1_0|0)
(2_1_0_0|0) (2_1_1_0|0) (2_1_-1_0|0) (I|0) (4_+^0_0_1|0)
(m_0_0_1|0) (4_-^0_0_1|0) (m_0_1_0|0) (m_1_0_0|0) (m_1_1_0|0)
(m_1_-1_0|0)' (1|0)' (4_+^0_0_1|0)' (2_0_0_1|0)' (4_-^0_0_1|0)'
(2_0_1_0|0)' (2_1_0_0|0)' (2_1_1_0|0)' (2_1_-1_0|0)' (I|0)'
(4_+^0_0_1|0)' (m_0_0_1|0)' (4_-^0_0_1|0)' (m_0_1_0|0)' (m_1_0_0|0)'
(m_1_1_0|0)' (m_1_-1_0|0)'
]

Group 15.2.1.152 (Nonmagnetic spacetime group):

{(1 | n)}

[
(1|0) (4_+^0_0_1|½) (2_0_0_1|0) (4_-^0_0_1|½) (2_0_1_0|0)
(2_1_0_0|0) (2_1_1_0|½) (2_1_-1_0|½) (I|0) (4_+^0_0_1|½)
(m_0_0_1|0) (4_-^0_0_1|½) (m_0_1_0|0) (m_1_0_0|0) (m_1_1_0|½)
(m_1_-1_0|½)
]

Group 15.2.2.153 (Class 2

Group): {(1 | n)}

[
(1|0) (4_+^0_0_1|½) (2_0_0_1|0) (4_-^0_0_1|½) (2_0_1_0|0)
(2_1_0_0|0) (2_1_1_0|½) (2_1_-1_0|½) (I|0) (4_+^0_0_1|½)
(m_0_0_1|0) (4_-^0_0_1|½) (m_0_1_0|0) (m_1_0_0|0) (m_1_1_0|½)
]

$(m_{1-1} 0 \frac{1}{2})$	$(1 0)'$	$(4^+ 0_0 1 \frac{1}{2})'$	$(2_0 0_1 0)'$	$(4^- 0_0 1 \frac{1}{2})'$
$(2_0 1_0 0)'$	$(2_1 0_0 0)'$	$(2_1 1_0 \frac{1}{2})'$	$(2_1 -1_0 \frac{1}{2})'$	$(\bar{1} 0)'$
$(\bar{4}^+ 0_0 1 \frac{1}{2})'$	$(m_0 0_1 0)'$	$(\bar{4}^- 0_0 1 \frac{1}{2})'$	$(m_0 1_0 0)'$	$(m_1 0_0 0)'$
$(m_1 1_0 \frac{1}{2})'$	$(m_1 -1_0 \frac{1}{2})'$			

]

Group 15.3.1.154 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1 | 0)           (4^+ 0_0 1 | 0)           (2_0 0_1 | 0)           (4^- 0_0 1 | 0)           (2_0 1_0 | \frac{1}{2})
(2_1 0_0 | \frac{1}{2}) (2_1 1_0 | \frac{1}{2}) (2_1 -1_0 | \frac{1}{2}) (\bar{1} | 0)           (\bar{4}^+ 0_0 1 | 0)
(m_0 0_1 | 0)     (\bar{4}^- 0_0 1 | 0)      (m_0 1_0 | \frac{1}{2}) (m_1 0_0 | \frac{1}{2})      (m_1 1_0 | \frac{1}{2})
(m_1 -1_0 | \frac{1}{2})
]
```

Group 15.3.2.155 (Class 2

Group): {(1 | n)}

```
[
(1 | 0)           (4^+ 0_0 1 | 0)           (2_0 0_1 | 0)           (4^- 0_0 1 | 0)           (2_0 1_0 | \frac{1}{2})
(2_1 0_0 | \frac{1}{2}) (2_1 1_0 | \frac{1}{2}) (2_1 -1_0 | \frac{1}{2}) (\bar{1} | 0)           (\bar{4}^+ 0_0 1 | 0)
(m_0 0_1 | 0)     (\bar{4}^- 0_0 1 | 0)      (m_0 1_0 | \frac{1}{2}) (m_1 0_0 | \frac{1}{2})      (m_1 1_0 | \frac{1}{2})
(m_1 -1_0 | \frac{1}{2}) (1 | 0)'           (4^+ 0_0 1 | 0)'         (2_0 0_1 | 0)'           (4^- 0_0 1 | 0)'
(2_0 1_0 | \frac{1}{2})' (2_1 0_0 | \frac{1}{2})' (2_1 1_0 | \frac{1}{2})' (2_1 -1_0 | \frac{1}{2})' (\bar{1} | 0)'
(\bar{4}^+ 0_0 1 | 0)' (m_0 0_1 | 0)'       (\bar{4}^- 0_0 1 | 0)'      (m_0 1_0 | \frac{1}{2})' (m_1 0_0 | \frac{1}{2})'
(m_1 1_0 | \frac{1}{2})' (m_1 -1_0 | \frac{1}{2})'
]
```

Group 15.4.1.156 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1 | 0)           (4^+ 0_0 1 | 0)           (2_0 0_1 | 0)           (4^- 0_0 1 | 0)           (2_0 1_0 | 0)
(2_1 0_0 | 0)     (2_1 1_0 | 0)           (2_1 -1_0 | 0)         (\bar{1} | \frac{1}{2})        (\bar{4}^+ 0_0 1 | \frac{1}{2})
(m_0 0_1 | \frac{1}{2}) (\bar{4}^- 0_0 1 | 0)      (m_0 1_0 | \frac{1}{2}) (m_1 0_0 | \frac{1}{2})      (m_1 1_0 | \frac{1}{2})
(m_1 -1_0 | \frac{1}{2})
]
```

Group 15.4.2.157 (Class 2

Group): {(1 | n)}

```
[
(1 | 0)           (4^+ 0_0 1 | 0)           (2_0 0_1 | 0)           (4^- 0_0 1 | 0)           (2_0 1_0 | 0)
(2_1 0_0 | 0)     (2_1 1_0 | 0)           (2_1 -1_0 | 0)         (\bar{1} | \frac{1}{2})        (\bar{4}^+ 0_0 1 | \frac{1}{2})
(m_0 0_1 | \frac{1}{2}) (\bar{4}^- 0_0 1 | 0)      (m_0 1_0 | \frac{1}{2}) (m_1 0_0 | \frac{1}{2})      (m_1 1_0 | \frac{1}{2})
(m_1 -1_0 | \frac{1}{2}) (1 | 0)'           (4^+ 0_0 1 | 0)'         (2_0 0_1 | 0)'           (4^- 0_0 1 | 0)'
(2_0 1_0 | 0)'     (2_1 0_0 | 0)'         (2_1 1_0 | 0)'         (2_1 -1_0 | 0)'        (\bar{1} | \frac{1}{2})'
(\bar{4}^+ 0_0 1 | \frac{1}{2})' (m_0 0_1 | \frac{1}{2})' ( \bar{4}^- 0_0 1 | 0)'      (m_0 1_0 | \frac{1}{2})' (m_1 0_0 | \frac{1}{2})'
(m_1 1_0 | \frac{1}{2})' (m_1 -1_0 | \frac{1}{2})'
]
```

Group 15.5.1.158 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1 | 0)           (4^+ 0_0 1 | \frac{1}{2}) (2_0 0_1 | 0)           (4^- 0_0 1 | \frac{1}{2}) (2_0 1_0 | 0)
(2_1 0_0 | 0)     (2_1 1_0 | \frac{1}{2})   (2_1 -1_0 | \frac{1}{2}) (\bar{1} | \frac{1}{2})   (\bar{4}^+ 0_0 1 | 0)
(m_0 0_1 | \frac{1}{2}) (\bar{4}^- 0_0 1 | 0) (m_0 1_0 | \frac{1}{2}) (m_1 0_0 | \frac{1}{2}) (m_1 1_0 | 0)
(m_1 -1_0 | 0)
]
```

Group 15.5.2.159 (Class 2

Group): {(1 | n)}

```

[
(1|0)          (4+001|½)          (2001|0)          (4-001|½)          (2010|0)
(2100|0)        (2110|½)          (21-10|½)         (1|½)            (4+001|0)
(m001|½)        (4-001|0)          (m010|½)          (m100|½)          (m110|0)
(m1-10|0)       (1|0)'           (4+001|½)'         (2001|0)'          (4-001|½)'
(2010|0)'       (2100|0)'           (2110|½)'         (21-10|½)'         (1|½)'
(4+001|0)'     (m001|½)'           (4-001|0)'         (m010|½)'          (m100|½)'
(m110|0)'       (m1-10|0)'          ]
-----
```

Group 15.6.1.160 (Nonmagnetic spacetime group):

{(1 | n)}

```

[
(1|0)          (4+001|0)          (2001|0)          (4-001|0)          (2010|½)
(2100|½)        (2110|½)          (21-10|½)         (1|½)            (4+001|½)
(m001|½)        (4-001|0)          (m010|0)          (m100|0)          (m110|0)
(m1-10|0)
]
```

Group 15.6.2.161 (Class 2

Group): {(1 | n)}

```

[
(1|0)          (4+001|0)          (2001|0)          (4-001|0)          (2010|½)
(2100|½)        (2110|½)          (21-10|½)         (1|½)            (4+001|½)
(m001|½)        (4-001|0)          (m010|0)          (m100|0)          (m110|0)
(m1-10|0)
(1|0)'         (4+001|0)'         (2001|0)'          (4-001|0)'         (2010|½)'
(2010|½)'       (2100|½)'           (2110|½)'         (21-10|½)'         (1|½)'
(4+001|½)'     (m001|½)'           (4-001|0)'         (m010|0)'          (m100|0)'
(m110|0)'       (m1-10|0)'          ]
-----
```

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 16 (3)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 16.1.1.162 (Nonmagnetic spacetime group):

{(1 | n)}

```

[
(1|0)          (3+001|0)          (3-001|0)
]
```

Group 16.1.2.163 (Class 2

Group): {(1 | n)}

```

[
(1|0)          (3+001|0)          (3-001|0)          (1|0)'           (3+001|0)'
(3-001|0)'
]
```

Group 16.1.3.164 (Class 3

Group):

$$\{(1 \mid n)\} \\ [\\ \begin{pmatrix} (1 \mid 0) & (3^{+001} \mid 0) & (3^{-001} \mid 0) & (\bar{1} \mid 0)' & (\bar{3}^{+001} \mid 0)' \\ (\bar{3}^{-001} \mid 0)' & \end{pmatrix} \\]$$

Group 16.1.4.165 (Class 3)

Group): { (1 | n) }

$$\left[\begin{array}{c} (1|0) \\ (3^+001|0) \\ (3^-001|0) \\ (2_1-10|0) \\ (2_120|0) \end{array} \right]$$

Group 16.1.5.166 (Class 3)

Group): { (1 | n)}

$$\left[\begin{array}{c} (1|0) \\ (3^+001|0) \\ (3^-001|0) \\ (m_010|0) \\ (m_100|0) \end{array} \right]$$

Group 16.1.6.167 (Class 3)

Group) : { (1 | n)}

$$\left[\begin{array}{c} (1|0) \\ (3^+001|0) \\ (3^-001|0) \\ (6^+001|0) \\ (2001|0) \end{array} \right]$$

Group 16.1.7.168 (Class 3)

Group) : { (1 | n)}

$$\left[\begin{array}{c} (1|0) \\ (3^+_{01}|0) \\ (\overline{6}^-_{01}|0) \\ [] \end{array} \right] \quad (3^-_{01}|0) \quad (\overline{6}^+_{01}|0) \quad (m_0_{01}|0)$$

Group 16.2.1.169 (Nonmagnetic spacetime group):

$$\{ (1 \mid n) \}$$

$$[(1 \mid 0) \quad (3^+ \circ \circ 1 \mid \frac{1}{3}) \quad (3^- \circ \circ 1 \mid \frac{2}{3})]$$

Group 16.2.2.170 (Class 3)

Group): { (1 | n) }

$$[(1 \ 0) \quad (3^+ \ 0 \ 0 \ 1 \mid \frac{1}{3}) \quad (3^- \ 0 \ 0 \ 1 \mid \frac{2}{3}) \quad (2_1 - 1_0 \mid 0) \quad (2_1 2_0 \mid \frac{2}{3})]$$

Group 16.2.3.171 (Class 3)

Group): {(1 | n)}

$$\begin{bmatrix}
 & & & & \\
 (1|0) & (3^+001|\tfrac{1}{3}) & (3^-001|\tfrac{2}{3}) & (m_010|0) & (m_100|\tfrac{1}{3}) \\
 (m_{110}|\tfrac{2}{3}) & & & & \\
 \end{bmatrix}$$

%%%%%%%%%%%%%%

POINT GROUP 17 (-3)

%%%%%%%%%%%%%%

Group 17.1.1.172 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
 (1|0) (3+001|0) (3-001|0) (1|0) (3+001|0)  
 (3-001|0) (1|0)' (3+001|0)' (3-001|0)' (1|0)'  
 ]
```

Group 17.1.2.173 (Class 2

```
Group): {(1 | n)}  
[  
 (1|0) (3+001|0) (3-001|0) (1|0) (3+001|0)  
 (3-001|0) (1|0)' (3+001|0)' (3-001|0)' (1|0)'  
 (3+001|0)' (3-001|0)'  
 ]
```

Group 17.1.3.174 (Class 3

```
Group): {(1 | n)}  
[  
 (1|0) (3+001|0) (3-001|0) (1|0) (3+001|0)  
 (3-001|0) (21-10|0)' (2120|0)' (2210|0)' (m120|0)'  
 (m210|0)'  
 ]
```

Group 17.1.4.175 (Class 3

```
Group): {(1 | n)}  
[  
 (1|0) (3+001|0) (3-001|0) (1|0) (3+001|0)  
 (3-001|0) (6+001|0)' (2001|0)' (6-001|0)' (6+001|0)'  
 (m001|0)' (6-001|0)'  
 ]
```

Group 17.2.1.176 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
 (1|0) (3+001|1/3) (3-001|1/3) (1|0) (3+001|1/3)  
 (3-001|1/3) (21-10|0)' (2120|0)' (2210|0)' (m120|0)'  
 ]
```

Group 17.2.2.177 (Class 3

```
Group): {(1 | n)}  
[  
 (1|0) (3+001|1/3) (3-001|1/3) (1|0) (3+001|1/3)  
 (3-001|1/3) (21-10|0)' (2120|0)' (2210|0)' (m120|0)'  
 (m210|0)'  
 ]
```

Group 17.3.1.178 (Nonmagnetic spacetime group):

```
{(1 | n)}  
[  
 (1|0) (3+001|0) (3-001|0) (1|1/2) (3+001|1/2)  
 (3-001|1/2)  
 ]
```

Group 17.3.2.179 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid 0)$ $(3^-_{001} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{3}^+_{001} \mid \frac{1}{2})$
 $(\bar{3}^-_{001} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(3^+_{001} \mid 0)'$ $(3^-_{001} \mid 0)'$ $(\bar{1} \mid \frac{1}{2})'$
 $(\bar{3}^+_{001} \mid \frac{1}{2})'$ $(\bar{3}^-_{001} \mid \frac{1}{2})'$
]

Group 17.3.3.180 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid 0)$ $(3^-_{001} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{3}^+_{001} \mid \frac{1}{2})$
 $(\bar{3}^-_{001} \mid \frac{1}{2})$ $(2_{1-10} \mid 0)'$ $(2_{120} \mid 0)'$ $(2_{210} \mid 0)'$ $(m_{1-10} \mid \frac{1}{2})'$
 $(m_{120} \mid \frac{1}{2})'$ $(m_{210} \mid \frac{1}{2})'$
]

Group 17.3.4.181 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid 0)$ $(3^-_{001} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{3}^+_{001} \mid \frac{1}{2})$
 $(\bar{3}^-_{001} \mid \frac{1}{2})$ $(6^+_{001} \mid 0)'$ $(2_{001} \mid 0)'$ $(6^-_{001} \mid 0)'$ $(\bar{6}^+_{001} \mid \frac{1}{2})'$
 $(m_{001} \mid \frac{1}{2})'$ $(\bar{6}^-_{001} \mid \frac{1}{2})'$
]

Group 17.4.1.182 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid \frac{1}{3})$ $(3^-_{001} \mid \frac{2}{3})$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{3}^+_{001} \mid \frac{5}{6})$
 $(\bar{3}^-_{001} \mid \frac{1}{6})$
]

Group 17.4.2.183 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid \frac{1}{3})$ $(3^-_{001} \mid \frac{2}{3})$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{3}^+_{001} \mid \frac{5}{6})$
 $(\bar{3}^-_{001} \mid \frac{1}{6})$ $(2_{1-10} \mid 0)'$ $(2_{120} \mid \frac{2}{3})'$ $(2_{210} \mid \frac{1}{3})'$ $(m_{1-10} \mid \frac{1}{2})'$
 $(m_{120} \mid \frac{1}{6})'$ $(m_{210} \mid \frac{5}{6})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 18 (32)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 18.1.1.184 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{001} \mid 0)$ $(3^-_{001} \mid 0)$ $(2_{1-10} \mid 0)$ $(2_{120} \mid 0)$
 $(2_{210} \mid 0)$
]

]

Group 18.1.2.185 (Class 2
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(1 \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(3^-_{0\ 0\ 1} \mid 0)'$ $(2_{1-1\ 0} \mid 0)'$
 $(2_{1\ 2\ 0} \mid 0)'$ $(2_{2\ 1\ 0} \mid 0)'$
]

Group 18.1.3.186 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(\bar{1} \mid 0)'$ $(\bar{3}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{3}^-_{0\ 0\ 1} \mid 0)'$ $(m_{1-1\ 0} \mid 0)'$
 $(m_{1\ 2\ 0} \mid 0)'$ $(m_{2\ 1\ 0} \mid 0)'$
]

Group 18.1.4.187 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 1\ 0} \mid 0)'$
 $(2_{1\ 0\ 0} \mid 0)'$ $(2_{1\ 1\ 0} \mid 0)'$
]

Group 18.1.5.188 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 0\ 1} \mid 0)'$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$
 $(m_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$
]

Group 18.2.1.189 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid \frac{1}{2})$ $(2_{1\ 2\ 0} \mid \frac{1}{2})$
 $(2_{2\ 1\ 0} \mid \frac{1}{2})$
]

Group 18.2.2.190 (Class 2
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid \frac{1}{2})$ $(2_{1\ 2\ 0} \mid \frac{1}{2})$
 $(2_{2\ 1\ 0} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(3^-_{0\ 0\ 1} \mid 0)'$ $(2_{1-1\ 0} \mid \frac{1}{2})'$
 $(2_{1\ 2\ 0} \mid \frac{1}{2})'$ $(2_{2\ 1\ 0} \mid \frac{1}{2})'$
]

Group 18.2.3.191 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid \frac{1}{2})$ $(2_{1\ 2\ 0} \mid \frac{1}{2})$
 $(2_{2\ 1\ 0} \mid \frac{1}{2})$ $(\bar{1} \mid 0)'$ $(\bar{3}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{3}^-_{0\ 0\ 1} \mid 0)'$ $(m_{1-1\ 0} \mid \frac{1}{2})'$
 $(m_{1\ 2\ 0} \mid \frac{1}{2})'$ $(m_{2\ 1\ 0} \mid \frac{1}{2})'$
]

Group 18.2.4.192 (Class 3
 Group): $\{(1 \mid n)\}$
 [
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1-1\ 0} \mid \frac{1}{2})$ $(2_{1\ 2\ 0} \mid \frac{1}{2})$
 $(2_{2\ 1\ 0} \mid \frac{1}{2})$ $(6^+_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 1\ 0} \mid \frac{1}{2})'$
 $(2_{1\ 0\ 0} \mid \frac{1}{2})'$ $(2_{1\ 1\ 0} \mid \frac{1}{2})'$
]

]

Group 18.2.5.193 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1\ -1\ 0} \mid \frac{1}{2})$ $(2_{1\ 2\ 0} \mid \frac{1}{2})$
 $(2_{2\ 1\ 0} \mid \frac{1}{2})$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 0\ 1} \mid 0)'$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$
 $(m_{1\ 0\ 0} \mid \frac{1}{2})'$ $(m_{1\ 1\ 0} \mid \frac{1}{2})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 19 (3m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 19.1.1.194 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
 $(m_{1\ 1\ 0} \mid 0)$
]

Group 19.1.2.195 (Class 2

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
 $(m_{1\ 1\ 0} \mid 0)$ $(1 \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(3^-_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$
 $(m_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$
]

Group 19.1.3.196 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
 $(m_{1\ 1\ 0} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$ $(2_{1\ 1\ 0} \mid 0)'$ $(\bar{1} \mid 0)'$
 $(\bar{3}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{3}^-_{0\ 0\ 1} \mid 0)'$
]

Group 19.1.4.197 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
 $(m_{1\ 1\ 0} \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid 0)'$ $(m_{1\ -1\ 0} \mid 0)'$
 $(m_{1\ 2\ 0} \mid 0)'$ $(m_{2\ 1\ 0} \mid 0)'$
]

Group 19.1.5.198 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$ $(m_{1\ 0\ 0} \mid 0)$
 $(m_{1\ 1\ 0} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)'$ $(2_{1\ 2\ 0} \mid 0)'$ $(2_{2\ 1\ 0} \mid 0)'$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$
 $(m_{0\ 0\ 1} \mid 0)'$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$
]

]

Group 19.2.1.199 (Nonmagnetic spacetime group):
{(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (m₀ 1 0 | ½) (m₁ 0 0 | ½)
(m₁ 1 0 | ½)
(m₁ 0 0 | ½)']

Group 19.2.2.200 (Class 2
Group): {(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (m₀ 1 0 | ½) (m₁ 0 0 | ½)
(m₁ 1 0 | ½)' (1 | 0)' (3⁺ 0 0 1 | 0)' (3⁻ 0 0 1 | 0)' (m₀ 1 0 | ½)'
(m₁ 0 0 | ½)']

Group 19.2.3.201 (Class 3
Group): {(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (m₀ 1 0 | ½) (m₁ 0 0 | ½)
(m₁ 1 0 | ½)' (2₀ 1 0 | 0)' (2₁ 0 0 | 0)' (2₁ 1 0 | 0)' (I | ½)'
(3⁺ 0 0 1 | ½)' (3⁻ 0 0 1 | ½)']

Group 19.2.4.202 (Class 3
Group): {(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (m₀ 1 0 | ½) (m₁ 0 0 | ½)
(m₁ 1 0 | ½)' (6⁺ 0 0 1 | 0)' (2₀ 0 1 | 0)' (6⁻ 0 0 1 | 0)' (m₁ - 1 0 | ½)'
(m₁ 2 0 | ½)' (m₂ 1 0 | ½)']

Group 19.2.5.203 (Class 3
Group): {(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (m₀ 1 0 | ½) (m₁ 0 0 | ½)
(m₁ 1 0 | ½)' (2₁ - 1 0 | 0)' (2₁ 2 0 | 0)' (2₂ 1 0 | 0)' (6⁺ 0 0 1 | ½)'
(m₀ 0 1 | ½)' (6⁻ 0 0 1 | ½)']

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 20 (-3m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 20.1.1.204 (Nonmagnetic spacetime group):
{(1 | n)}
[(1 | 0) (3⁺ 0 0 1 | 0) (3⁻ 0 0 1 | 0) (2₁ - 1 0 | 0) (2₁ 2 0 | 0)

$(2_{210} 0)$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(m_{1-10} 0)$
$(m_{120} 0)$	$(m_{210} 0)$			
]				

Group 20.1.2.205 (Class 2

Group): $\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(m_{1-10} 0)$
$(m_{120} 0)$	$(m_{210} 0)$	$(1 0)'$	$(3^+_{001} 0)'$	$(3^-_{001} 0)'$
$(2_{1-10} 0)'$	$(2_{120} 0)'$	$(2_{210} 0)'$	$(\bar{1} 0)'$	$(\bar{3}^+_{001} 0)'$
$(\bar{3}^-_{001} 0)'$	$(m_{1-10} 0)'$	$(m_{120} 0)'$	$(m_{210} 0)'$	
]				

Group 20.1.3.206 (Class 3

Group): $\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)'$	$(\bar{3}^-_{001} 0)'$	$(m_{1-10} 0)'$
$(m_{120} 0)$	$(m_{210} 0)$	$(6^+_{001} 0)'$	$(2_{001} 0)'$	$(6^-_{001} 0)'$
$(2_{010} 0)'$	$(2_{100} 0)'$	$(2_{110} 0)'$	$(\bar{6}^+_{001} 0)'$	$(m_{001} 0)'$
$(\bar{6}^-_{001} 0)'$	$(m_{010} 0)'$	$(m_{100} 0)'$	$(m_{110} 0)'$	
]				

Group 20.2.1.207 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} \frac{1}{2})$	$(2_{120} \frac{1}{2})$
$(2_{210} \frac{1}{2})$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(m_{1-10} \frac{1}{2})$
$(m_{120} \frac{1}{2})$	$(m_{210} \frac{1}{2})$			
]				

Group 20.2.2.208 (Class 2

Group): $\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} \frac{1}{2})$	$(2_{120} \frac{1}{2})$
$(2_{210} \frac{1}{2})$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(m_{1-10} \frac{1}{2})$
$(m_{120} \frac{1}{2})$	$(m_{210} \frac{1}{2})$	$(1 0)'$	$(3^+_{001} 0)'$	$(3^-_{001} 0)'$
$(2_{1-10} \frac{1}{2})'$	$(2_{120} \frac{1}{2})'$	$(2_{210} \frac{1}{2})'$	$(\bar{1} 0)'$	$(\bar{3}^+_{001} 0)'$
$(\bar{3}^-_{001} 0)'$	$(m_{1-10} \frac{1}{2})'$	$(m_{120} \frac{1}{2})'$	$(m_{210} \frac{1}{2})'$	
]				

Group 20.2.3.209 (Class 3

Group): $\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} \frac{1}{2})$	$(2_{120} \frac{1}{2})$
$(2_{210} \frac{1}{2})$	$(\bar{1} 0)$	$(\bar{3}^+_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(m_{1-10} \frac{1}{2})$
$(m_{120} \frac{1}{2})$	$(m_{210} \frac{1}{2})$	$(6^+_{001} 0)'$	$(2_{001} 0)'$	$(6^-_{001} 0)'$
$(2_{010} \frac{1}{2})'$	$(2_{100} \frac{1}{2})'$	$(2_{110} \frac{1}{2})'$	$(\bar{6}^+_{001} 0)'$	$(m_{001} 0)'$
$(\bar{6}^-_{001} 0)'$	$(m_{010} \frac{1}{2})'$	$(m_{100} \frac{1}{2})'$	$(m_{110} \frac{1}{2})'$	
]				

Group 20.3.1.210 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{1} \frac{1}{2})$	$(\bar{3}^+_{001} \frac{1}{2})$	$(\bar{3}^-_{001} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$
$(m_{120} \frac{1}{2})$	$(m_{210} \frac{1}{2})$			
]				

Group 20.3.2.211 (Class 2 Group):

```

{(1 | n)}
[
(1|0) (3+0 0 1 | 0) (3-0 0 1 | 0) (21-1 0 | 0) (212 0 | 0)
(221 0 | 0) (1̄ | ½) (3+0 0 1 | ½) (3-0 0 1 | ½) (m1-1 0 | ½)
(m12 0 | ½) (m21 0 | ½) (1|0)' (3+0 0 1 | 0)' (3-0 0 1 | 0)'
(21-1 0 | 0)' (212 0 | 0)' (221 0 | 0)' (1̄ | ½)' (3+0 0 1 | ½)'
(3-0 0 1 | ½)' (m1-1 0 | ½)' (m21 0 | ½)' (m21 0 | ½)'
]

```

Group 20.3.3.212 (Class 3

Group): {(1 | n)}

```

[
(1|0) (3+0 0 1 | 0) (3-0 0 1 | 0) (21-1 0 | 0) (212 0 | 0)
(221 0 | 0) (1̄ | ½) (3+0 0 1 | ½) (3-0 0 1 | ½) (m1-1 0 | ½)
(m12 0 | ½) (m21 0 | ½) (6+0 0 1 | 0)' (200 1 | 0)' (6-0 0 1 | 0)'
(201 0 | 0)' (210 0 | 0)' (211 0 | 0)' (1̄ | ½)' (m11 0 | ½)'
(6-0 0 1 | ½)' (m01 0 | ½)' (m10 0 | ½)' (m11 0 | ½)'
]
-----
```

Group 20.4.1.213 (Nonmagnetic spacetime group):

{(1 | n)}

```

[
(1|0) (3+0 0 1 | 0) (3-0 0 1 | 0) (21-1 0 | ½) (212 0 | ½)
(221 0 | ½) (1̄ | ½) (3+0 0 1 | ½) (3-0 0 1 | ½) (m1-1 0 | 0)
(m12 0 | 0) (m21 0 | 0)
]
```

Group 20.4.2.214 (Class 2

Group): {(1 | n)}

```

[
(1|0) (3+0 0 1 | 0) (3-0 0 1 | 0) (21-1 0 | ½) (212 0 | ½)
(221 0 | ½) (1̄ | ½) (3+0 0 1 | ½) (3-0 0 1 | ½) (m1-1 0 | 0)
(m12 0 | 0) (m21 0 | 0)
(21-1 0 | ½)' (212 0 | ½)' (221 0 | ½)' (1̄ | ½)' (3+0 0 1 | ½)'
(3-0 0 1 | ½)' (m1-1 0 | 0)' (m21 0 | 0)' (m21 0 | 0)'
]

```

Group 20.4.3.215 (Class 3

Group): {(1 | n)}

```

[
(1|0) (3+0 0 1 | 0) (3-0 0 1 | 0) (21-1 0 | ½) (212 0 | ½)
(221 0 | ½) (1̄ | ½) (3+0 0 1 | ½) (3-0 0 1 | ½) (m1-1 0 | 0)
(m12 0 | 0) (m21 0 | 0)
(201 0 | ½)' (210 0 | ½)' (211 0 | ½)' (1̄ | ½)' (6+0 0 1 | ½)'
(6-0 0 1 | ½)' (m01 0 | 0)' (m10 0 | 0)' (m11 0 | 0)'
]
-----
```

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

POINT GROUP 21 (6)

%%%%%%%%%%%%%%

Group 21.1.1.216 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$
]

Group 21.1.2.217 (Class 2 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(1 \mid 0)'$ $(6^+_{0\ 0\ 1} \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 0\ 1} \mid 0)'$
 $(3^-_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid 0)'$
]

Group 21.1.3.218 (Class 3 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid 0)'$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{3}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{m}_{0\ 0\ 1} \mid 0)'$
 $(\bar{3}^-_{0\ 0\ 1} \mid 0)'$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$
]

Group 21.1.4.219 (Class 3 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid 0)'$ $(2_{1\ 1\ 0} \mid 0)'$ $(2_{1\ -1\ 0} \mid 0)'$
 $(2_{1\ 2\ 0} \mid 0)'$ $(2_{2\ 1\ 0} \mid 0)'$
]

Group 21.1.5.220 (Class 3 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$ $(m_{1\ -1\ 0} \mid 0)'$
 $(m_{1\ 2\ 0} \mid 0)'$ $(m_{2\ 1\ 0} \mid 0)'$
]

Group 21.2.1.221 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$
]

Group 21.2.2.222 (Class 2 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(2_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(3^-_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid \frac{1}{2})'$
]

Group 21.2.3.223 (Class 3 Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{1} \mid 0)'$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(\bar{3}^+_{0\ 0\ 1} \mid 0)'$ $(\bar{m}_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(\bar{3}^-_{0\ 0\ 1} \mid 0)'$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})'$
]

Group 21.2.4.224 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{\ 0\ 0\ 1} \mid 0)$ $(2_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{\ 0\ 0\ 1} \mid 0)$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(2_{\ 0\ 1\ 0} \mid 0)$ ' $(2_{\ 1\ 0\ 0} \mid 0)$ ' $(2_{\ 1\ 1\ 0} \mid 0)$ ' $(2_{\ 1\ -1\ 0} \mid \frac{1}{2})$ '
 $(2_{\ 1\ 2\ 0} \mid \frac{1}{2})$ ' $(2_{\ 2\ 1\ 0} \mid \frac{1}{2})$ '
]

Group 21.2.5.225 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{\ 0\ 0\ 1} \mid 0)$ $(2_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{\ 0\ 0\ 1} \mid 0)$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(m_{\ 0\ 1\ 0} \mid 0)$ ' $(m_{\ 1\ 0\ 0} \mid 0)$ ' $(m_{\ 1\ 1\ 0} \mid 0)$ ' $(m_{\ 1\ -1\ 0} \mid \frac{1}{2})$ '
 $(m_{\ 1\ 2\ 0} \mid \frac{1}{2})$ ' $(m_{\ 2\ 1\ 0} \mid \frac{1}{2})$ '
]

Group 21.3.1.226 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{2}{3})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid 0)$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{1}{3})$
]

Group 21.3.2.227 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{2}{3})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid 0)$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 1\ 0} \mid 0)$ ' $(2_{\ 1\ 0\ 0} \mid \frac{2}{3})$ ' $(2_{\ 1\ 1\ 0} \mid \frac{2}{3})$ ' $(2_{\ 1\ -1\ 0} \mid \frac{2}{3})$ '
 $(2_{\ 1\ 2\ 0} \mid \frac{1}{3})$ ' $(2_{\ 2\ 1\ 0} \mid 0)$ '
]

Group 21.3.3.228 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{2}{3})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid 0)$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(m_{\ 0\ 1\ 0} \mid 0)$ ' $(m_{\ 1\ 0\ 0} \mid \frac{2}{3})$ ' $(m_{\ 1\ 1\ 0} \mid \frac{2}{3})$ ' $(m_{\ 1\ -1\ 0} \mid \frac{2}{3})$ '
 $(m_{\ 1\ 2\ 0} \mid \frac{1}{3})$ ' $(m_{\ 2\ 1\ 0} \mid 0)$ '
]

Group 21.4.1.229 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{1}{6})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{5}{6})$
]

Group 21.4.2.230 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{1}{6})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{5}{6})$ $(2_{\ 0\ 1\ 0} \mid 0)$ ' $(2_{\ 1\ 0\ 0} \mid \frac{1}{3})$ ' $(2_{\ 1\ 1\ 0} \mid \frac{2}{3})$ ' $(2_{\ 1\ -1\ 0} \mid \frac{1}{6})$ '
 $(2_{\ 1\ 2\ 0} \mid \frac{5}{6})$ ' $(2_{\ 2\ 1\ 0} \mid \frac{1}{2})$ '
]

Group 21.4.3.231 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{\ 0\ 0\ 1} \mid \frac{1}{6})$ $(3^+_{\ 0\ 0\ 1} \mid \frac{1}{3})$ $(2_{\ 0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{\ 0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{\ 0\ 0\ 1} \mid \frac{5}{6})$ $(m_{\ 0\ 1\ 0} \mid 0)$ ' $(m_{\ 1\ 0\ 0} \mid \frac{1}{3})$ ' $(m_{\ 1\ 1\ 0} \mid \frac{2}{3})$ ' $(m_{\ 1\ -1\ 0} \mid \frac{1}{6})$ '
]

$$(\mathbf{m}_{1\ 2\ 0} \mid \frac{5}{6})' \quad (\mathbf{m}_{2\ 1\ 0} \mid \frac{1}{2})'$$

POINT GROUP 22 (-6)

Group 22.1.1.232 (Nonmagnetic spacetime group):

$$\{ (1 \mid n) \}$$

$$[\begin{array}{c} (1|0) \\ (3^+_{01}|0) \\ (\overline{6}^-_{01}|0) \\]$$

Group 22.1.2.233 (Class 2)

Group): { (1 | n)}

$$\left[\begin{array}{ccccc} (1|0) & (3^+_{01}|0) & (3^-_{01}|0) & (\overline{6}^+_{01}|0) & (\mathbf{m}_{01}|0) \\ (\overline{6}^-_{01}|0) & (1|0)' & (3^+_{01}|0)' & (3^-_{01}|0)' & (\overline{6}^+_{01}|0)' \\ (\mathbf{m}_{01}|0)' & (\overline{6}^-_{01}|0)' & & & \end{array} \right]$$

Group 22.1.3.234 (Class 3)

Group) : { (1 | n)}

$$\left[\begin{array}{c} (1|0) \\ (\overline{6}^{-001}|0) \\ (\overline{3}^{+001}|0) \\ \hline (3^{+001}|0) \\ (6^{+001}|0)' \\ (\overline{3}^{-001}|0)' \\ \hline (3^{-001}|0) \\ (2^{+001}|0)' \\ \hline (\overline{6}^{+001}|0) \\ (6^{-001}|0)' \\ (\overline{1}|0) \end{array} \right]$$

Group 22.1.4.235 (Class 3)

Group): { (1 | n) }

$$\begin{bmatrix} (1|0) & (3^+_{01}|0) & (3^-_{01}|0) & (\overline{6}^+_{01}|0) & (m_01|0) \\ (\overline{6}^-_{01}|0) & (2_{-1}0|0)' & (2_{1}2|0)' & (2_{20}|0)' & (m_00|0)' \\ (m_10|0)' & (m_10|0)' \end{bmatrix}$$

Group 22.2.1.236 (Nonmagnetic spacetime group):

$$\{ (1 \quad | \quad n) \}$$

$$[(1|0) \quad (3^+_{01}|0) \quad (3^-_{01}|0) \quad (\overline{6}^+_{01}|\tfrac{1}{2}) \quad (m_{01}|\tfrac{1}{2})]$$

Group 22.2.2.237 (Class 2

Group): { (1 | n)}

$$[\begin{array}{c} (3^+_{01}\mid 0) \\ (3^-_{01}\mid 0) \\ (\overline{6}^+_{01}\mid \frac{1}{2}) \\ (\mathfrak{m}_{01}\mid \frac{1}{2}) \end{array}]$$

$(\bar{6}^-_{001} | \tfrac{1}{2})$ $(1|0)'$ $(3^+_{001}|0)'$ $(3^-_{001}|0)'$ $(\bar{6}^+_{001} | \tfrac{1}{2})'$
 $(m_{001} | \tfrac{1}{2})'$ $(\bar{6}^-_{001} | \tfrac{1}{2})'$
]

Group 22.2.3.238 (Class 3
Group): $\{(1 | n)\}$

[
 $(1|0)$ $(3^+_{001}|0)$ $(3^-_{001}|0)$ $(\bar{6}^+_{001} | \tfrac{1}{2})$ $(m_{001} | \tfrac{1}{2})$
 $(\bar{6}^-_{001} | \tfrac{1}{2})$ $(6^+_{001}|0)'$ $(2_{001}|0)'$ $(6^-_{001}|0)'$ $(\bar{1} | \tfrac{1}{2})'$
 $(\bar{3}^+_{001} | \tfrac{1}{2})'$ $(\bar{3}^-_{001} | \tfrac{1}{2})'$
]

Group 22.2.4.239 (Class 3
Group): $\{(1 | n)\}$

[
 $(1|0)$ $(3^+_{001}|0)$ $(3^-_{001}|0)$ $(\bar{6}^+_{001} | \tfrac{1}{2})$ $(m_{001} | \tfrac{1}{2})$
 $(\bar{6}^-_{001} | \tfrac{1}{2})$ $(2_{1-10}|0)'$ $(2_{120}|0)'$ $(2_{210}|0)'$ $(m_{010} | \tfrac{1}{2})'$
 $(m_{100} | \tfrac{1}{2})'$ $(m_{110} | \tfrac{1}{2})'$
]

Group 22.3.1.240 (Nonmagnetic spacetime group):

$\{(1 | n)\}$
[
 $(1|0)$ $(3^+_{001} | \tfrac{1}{3})$ $(3^-_{001} | \tfrac{2}{3})$ $(\bar{6}^+_{001} | \tfrac{2}{3})$ $(m_{001} | 0)$
 $(\bar{6}^-_{001} | \tfrac{1}{3})$
]

Group 22.3.2.241 (Class 3
Group): $\{(1 | n)\}$

[
 $(1|0)$ $(3^+_{001} | \tfrac{1}{3})$ $(3^-_{001} | \tfrac{2}{3})$ $(\bar{6}^+_{001} | \tfrac{2}{3})$ $(m_{001} | 0)$
 $(\bar{6}^-_{001} | \tfrac{1}{3})$ $(2_{1-10}|0)'$ $(2_{120}| \tfrac{2}{3})'$ $(2_{210}| \tfrac{1}{3})'$ $(m_{010} | \tfrac{1}{3})'$
 $(m_{100} | \tfrac{2}{3})'$ $(m_{110}|0)'$
]

Group 22.4.1.242 (Nonmagnetic spacetime group):

$\{(1 | n)\}$
[
 $(1|0)$ $(3^+_{001} | \tfrac{1}{3})$ $(3^-_{001} | \tfrac{2}{3})$ $(\bar{6}^+_{001} | \tfrac{1}{6})$ $(m_{001} | \tfrac{1}{2})$
 $(\bar{6}^-_{001} | \tfrac{5}{6})$
]

Group 22.4.2.243 (Class 3
Group): $\{(1 | n)\}$

[
 $(1|0)$ $(3^+_{001} | \tfrac{1}{3})$ $(3^-_{001} | \tfrac{2}{3})$ $(\bar{6}^+_{001} | \tfrac{1}{6})$ $(m_{001} | \tfrac{1}{2})$
 $(\bar{6}^-_{001} | \tfrac{5}{6})$ $(2_{1-10}|0)'$ $(2_{120}| \tfrac{2}{3})'$ $(2_{210}| \tfrac{1}{3})'$ $(m_{010} | \tfrac{5}{6})'$
 $(m_{100} | \tfrac{1}{6})'$ $(m_{110}| \tfrac{1}{2})'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 23 (6/m)

%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 23.1.1.244 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (1̄|0)             (6̄+001|0)          (3̄+001|0)          (m001|0)
(3̄-001|0)         (6̄-001|0)
]
```

Group 23.1.2.245 (Class 2

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (1̄|0)             (6̄+001|0)          (3̄+001|0)          (m001|0)
(3̄-001|0)         (6̄-001|0)          (1|0)'            (6+001|0)'          (3+001|0)'
(2001|0)'        (3-001|0)'          (6-001|0)'          (1̄|0)'            (6̄+001|0)'
(3̄+001|0)'        (m001|0)'          (3̄-001|0)'          (6-001|0)'          ]
]
```

Group 23.1.3.246 (Class 3

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (1̄|0)             (6̄+001|0)          (3̄+001|0)          (m001|0)
(3̄-001|0)         (6̄-001|0)          (2010|0)'          (2100|0)'          (2110|0)'
(21-10|0)'        (2120|0)'          (2210|0)'          (m010|0)'          (m100|0)'
(m110|0)'        (m1-10|0)'          (m120|0)'          (m210|0)'          ]
]
```

Group 23.2.1.247 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (6+001|½)           (3+001|0)           (2001|½)           (3-001|0)
(6-001|½)         (1̄|0)             (6̄+001|½)          (3̄+001|0)          (m001|½)
(3̄-001|0)         (6̄-001|½)
]
```

Group 23.2.2.248 (Class 2

```
Group): {(1 | n)}
[
(1|0)           (6+001|½)           (3+001|0)           (2001|½)           (3-001|0)
(6-001|½)         (1̄|0)             (6̄+001|½)          (3̄+001|0)          (m001|½)
(3̄-001|0)         (6̄-001|½)          (1|0)'            (6+001|½)'          (3+001|0)'
(2001|½)'        (3-001|0)'          (6-001|½)'          (1̄|0)'            (6̄+001|½)'
(3̄+001|0)'        (m001|½)'          (3̄-001|0)'          (6-001|½)'          ]
]
```

Group 23.2.3.249 (Class 3

```
Group): {(1 | n)}
[
(1|0)           (6+001|½)           (3+001|0)           (2001|½)           (3-001|0)
(6-001|½)         (1̄|0)             (6̄+001|½)          (3̄+001|0)          (m001|½)
(3̄-001|0)         (6̄-001|½)          (2010|0)'          (2100|0)'          (2110|0)'
(21-10|0)'        (2120|½)'          (2210|½)'          (m010|½)'          (m100|0)'
(m110|0)'        (m1-10|½)'          (m120|½)'          (m210|½)'          ]
]
```

Group 23.3.1.250 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{2}{3})$ $(3^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{3})$ $(\bar{1} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(m_{0\ 0\ 1} \mid 0)$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{3})$
]

Group 23.3.2.251 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{2}{3})$ $(3^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{3})$ $(\bar{1} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(m_{0\ 0\ 1} \mid 0)$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{3})$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid \frac{1}{3})'$ $(2_{1\ 1\ 0} \mid \frac{2}{3})'$
 $(2_{1\ -1\ 0} \mid \frac{2}{3})'$ $(2_{1\ 2\ 0} \mid \frac{1}{3})'$ $(2_{2\ 1\ 0} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid \frac{1}{3})'$
 $(m_{1\ 1\ 0} \mid \frac{2}{3})'$ $(m_{1\ -1\ 0} \mid \frac{1}{3})'$ $(m_{1\ 2\ 0} \mid \frac{1}{3})'$ $(m_{2\ 1\ 0} \mid 0)'$
]

Group 23.4.1.252 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{6})$ $(3^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{0\ 0\ 1} \mid \frac{5}{6})$ $(\bar{1} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{6})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{5}{6})$
]

Group 23.4.2.253 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{6})$ $(3^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid \frac{2}{3})$
 $(6^-_{0\ 0\ 1} \mid \frac{5}{6})$ $(\bar{1} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{6})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{3})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{2}{3})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{5}{6})$ $(2_{0\ 1\ 0} \mid 0)'$ $(2_{1\ 0\ 0} \mid \frac{1}{3})'$ $(2_{1\ 1\ 0} \mid \frac{2}{3})'$
 $(2_{1\ -1\ 0} \mid \frac{1}{6})'$ $(2_{1\ 2\ 0} \mid \frac{5}{6})'$ $(2_{2\ 1\ 0} \mid \frac{1}{2})'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid \frac{1}{3})'$
 $(m_{1\ 1\ 0} \mid \frac{2}{3})'$ $(m_{1\ -1\ 0} \mid \frac{1}{6})'$ $(m_{1\ 2\ 0} \mid \frac{5}{6})'$ $(m_{2\ 1\ 0} \mid \frac{1}{2})'$
]

Group 23.5.1.254 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})$
]

Group 23.5.2.255 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid 0)$ $(\bar{1} \mid \frac{1}{2})$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 0\ 1} \mid \frac{1}{2})$
 $(\bar{3}^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(1 \mid 0)'$ $(6^+_{0\ 0\ 1} \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$
 $(2_{0\ 0\ 1} \mid 0)'$ $(3^-_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid 0)'$ $(\bar{1} \mid \frac{1}{2})'$ $(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})'$
 $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(m_{0\ 0\ 1} \mid \frac{1}{2})'$ $(\bar{3}^-_{0\ 0\ 1} \mid \frac{1}{2})'$ $(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})'$
]

Group 23.5.3.256 (Class 3
Group): $\{(1 \mid n)\}$
[

$(1 0)$	$(6^+_{0\ 0\ 1} 0)$	$(3^+_{0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} 0)$	$(3^-_{0\ 0\ 1} 0)$
$(6^-_{0\ 0\ 1} 0)$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \frac{1}{2})$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})$	$(m_{0\ 0\ 1} \frac{1}{2})$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} \frac{1}{2})$	$(2_{0\ 1\ 0} 0)'$	$(2_{1\ 0\ 0} 0)'$	$(2_{1\ 1\ 0} 0)'$
$(2_{1\ -1\ 0} 0)'$	$(2_{1\ 2\ 0} 0)'$	$(2_{2\ 1\ 0} 0)'$	$(m_{0\ 1\ 0} \frac{1}{2})'$	$(m_{1\ 0\ 0} \frac{1}{2})'$
$(m_{1\ 1\ 0} \frac{1}{2})'$	$(m_{1\ -1\ 0} \frac{1}{2})'$	$(m_{1\ 2\ 0} \frac{1}{2})'$	$(m_{2\ 1\ 0} \frac{1}{2})'$	

]

Group 23.6.1.257 (Nonmagnetic spacetime group):

$\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{1}{2})$	$(3^+_{0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} \frac{1}{2})$	$(3^-_{0\ 0\ 1} 0)$
$(6^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} 0)$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})$	$(m_{0\ 0\ 1} 0)$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} 0)$			

]

Group 23.6.2.258 (Class 2

Group): $\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{1}{2})$	$(3^+_{0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} \frac{1}{2})$	$(3^-_{0\ 0\ 1} 0)$
$(6^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} 0)$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})$	$(m_{0\ 0\ 1} 0)$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} 0)$	$(1 0)'$	$(6^+_{0\ 0\ 1} \frac{1}{2})'$	$(3^+_{0\ 0\ 1} 0)'$
$(2_{0\ 0\ 1} \frac{1}{2})'$	$(3^-_{0\ 0\ 1} 0)'$	$(6^-_{0\ 0\ 1} \frac{1}{2})'$	$(\bar{1} \frac{1}{2})'$	$(\bar{6}^+_{0\ 0\ 1} 0)'$
$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})'$	$(m_{0\ 0\ 1} 0)'$	$(\bar{3}^-_{0\ 0\ 1} \frac{1}{2})'$	$(\bar{6}^-_{0\ 0\ 1} 0)'$	

]

Group 23.6.3.259 (Class 3

Group): $\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{1}{2})$	$(3^+_{0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} \frac{1}{2})$	$(3^-_{0\ 0\ 1} 0)$
$(6^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} 0)$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})$	$(m_{0\ 0\ 1} 0)$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} 0)$	$(2_{0\ 1\ 0} 0)'$	$(2_{1\ 0\ 0} 0)'$	$(2_{1\ 1\ 0} 0)'$
$(2_{1\ -1\ 0} \frac{1}{2})'$	$(2_{1\ 2\ 0} \frac{1}{2})'$	$(2_{2\ 1\ 0} \frac{1}{2})'$	$(m_{0\ 1\ 0} \frac{1}{2})'$	$(m_{1\ 0\ 0} \frac{1}{2})'$
$(m_{1\ 1\ 0} \frac{1}{2})'$	$(m_{1\ -1\ 0} 0)'$	$(m_{1\ 2\ 0} 0)'$	$(m_{2\ 1\ 0} 0)'$	

]

Group 23.7.1.260 (Nonmagnetic spacetime group):

$\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{2}{3})$	$(3^+_{0\ 0\ 1} \frac{1}{3})$	$(2_{0\ 0\ 1} 0)$	$(3^-_{0\ 0\ 1} \frac{2}{3})$
$(6^-_{0\ 0\ 1} \frac{1}{3})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \frac{1}{6})$	$(\bar{3}^+_{0\ 0\ 1} \frac{5}{6})$	$(m_{0\ 0\ 1} \frac{1}{2})$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{6})$	$(\bar{6}^-_{0\ 0\ 1} \frac{5}{6})$			

]

Group 23.7.2.261 (Class 3

Group): $\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{2}{3})$	$(3^+_{0\ 0\ 1} \frac{1}{3})$	$(2_{0\ 0\ 1} 0)$	$(3^-_{0\ 0\ 1} \frac{2}{3})$
$(6^-_{0\ 0\ 1} \frac{1}{3})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \frac{1}{6})$	$(\bar{3}^+_{0\ 0\ 1} \frac{5}{6})$	$(m_{0\ 0\ 1} \frac{1}{2})$
$(\bar{3}^-_{0\ 0\ 1} \frac{1}{6})$	$(\bar{6}^-_{0\ 0\ 1} \frac{5}{6})$	$(2_{0\ 1\ 0} 0)'$	$(2_{1\ 0\ 0} \frac{1}{3})'$	$(2_{1\ 1\ 0} \frac{2}{3})'$
$(2_{1\ -1\ 0} \frac{2}{3})'$	$(2_{1\ 2\ 0} \frac{1}{3})'$	$(2_{2\ 1\ 0} 0)'$	$(m_{0\ 1\ 0} \frac{1}{2})'$	$(m_{1\ 0\ 0} \frac{5}{6})'$
$(m_{1\ 1\ 0} \frac{1}{6})'$	$(m_{1\ -1\ 0} \frac{1}{6})'$	$(m_{1\ 2\ 0} \frac{5}{6})'$	$(m_{2\ 1\ 0} \frac{1}{2})'$	

]

Group 23.8.1.262 (Nonmagnetic spacetime group):

$\{(1 n)\}$				
[
$(1 0)$	$(6^+_{0\ 0\ 1} \frac{1}{6})$	$(3^+_{0\ 0\ 1} \frac{1}{3})$	$(2_{0\ 0\ 1} \frac{1}{2})$	$(3^-_{0\ 0\ 1} \frac{2}{3})$
$(6^-_{0\ 0\ 1} \frac{5}{6})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \frac{2}{3})$	$(\bar{3}^+_{0\ 0\ 1} \frac{5}{6})$	$(m_{0\ 0\ 1} 0)$

$(\bar{3}^-_{001}| \frac{1}{6})$ $(\bar{6}^-_{001}| \frac{1}{3})$
 $]$

Group 23.8.2.263 (Class 3

Group): $\{(1 | n)\}$

[
 $(1|0)$ $(6^+_{001}| \frac{1}{6})$ $(3^+_{001}| \frac{1}{3})$ $(2_{001}| \frac{1}{2})$ $(3^-_{001}| \frac{2}{3})$
 $(6^-_{001}| \frac{5}{6})$ $(\bar{1}| \frac{1}{2})$ $(\bar{6}^+_{001}| \frac{2}{3})$ $(\bar{3}^+_{001}| \frac{5}{6})$ $(m_{001}| 0)$
 $(\bar{3}^-_{001}| \frac{1}{6})$ $(\bar{6}^-_{001}| \frac{1}{3})$ $(2_{010}| 0)'$ $(2_{100}| \frac{1}{3})'$ $(2_{110}| \frac{2}{3})'$
 $(2_{1-10}| \frac{1}{6})'$ $(2_{120}| \frac{5}{6})'$ $(2_{210}| \frac{1}{2})'$ $(m_{010}| \frac{1}{2})'$ $(m_{100}| \frac{5}{6})'$
 $(m_{110}| \frac{1}{6})'$ $(m_{1-10}| \frac{2}{3})'$ $(m_{120}| \frac{1}{3})'$ $(m_{210}| 0)'$
 $]$

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 24 (622)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 24.1.1.264 (Nonmagnetic spacetime group):

$\{(1 | n)\}$
[
 $(1|0)$ $(6^+_{001}| 0)$ $(3^+_{001}| 0)$ $(2_{001}| 0)$ $(3^-_{001}| 0)$
 $(6^-_{001}| 0)$ $(2_{010}| 0)$ $(2_{100}| 0)$ $(2_{110}| 0)$ $(2_{1-10}| 0)$
 $(2_{120}| 0)$ $(2_{210}| 0)$
 $]$

Group 24.1.2.265 (Class 2

Group): $\{(1 | n)\}$

[
 $(1|0)$ $(6^+_{001}| 0)$ $(3^+_{001}| 0)$ $(2_{001}| 0)$ $(3^-_{001}| 0)$
 $(6^-_{001}| 0)$ $(2_{010}| 0)$ $(2_{100}| 0)$ $(2_{110}| 0)$ $(2_{1-10}| 0)$
 $(2_{120}| 0)$ $(2_{210}| 0)$ $(1|0)'$ $(6^+_{001}| 0)'$ $(3^+_{001}| 0)'$
 $(2_{001}| 0)'$ $(3^-_{001}| 0)'$ $(6^-_{001}| 0)'$ $(2_{010}| 0)'$ $(2_{100}| 0)'$
 $(2_{110}| 0)'$ $(2_{1-10}| 0)'$ $(2_{120}| 0)'$ $(2_{210}| 0)'$
 $]$

Group 24.1.3.266 (Class 3

Group): $\{(1 | n)\}$

[
 $(1|0)$ $(6^+_{001}| 0)$ $(3^+_{001}| 0)$ $(2_{001}| 0)$ $(3^-_{001}| 0)$
 $(6^-_{001}| 0)$ $(2_{010}| 0)$ $(2_{100}| 0)$ $(2_{110}| 0)$ $(2_{1-10}| 0)$
 $(2_{120}| 0)$ $(2_{210}| 0)$ $(\bar{1}| 0)'$ $(\bar{6}^+_{001}| 0)'$ $(\bar{3}^+_{001}| 0)'$
 $(m_{001}| 0)'$ $(\bar{3}^-_{001}| 0)'$ $(\bar{6}^-_{001}| 0)'$ $(m_{010}| 0)'$ $(m_{100}| 0)'$
 $(m_{110}| 0)'$ $(m_{1-10}| 0)'$ $(m_{120}| 0)'$ $(m_{210}| 0)'$
 $]$

Group 24.2.1.267 (Nonmagnetic spacetime group):

$\{(1 | n)\}$
[
 $(1|0)$ $(6^+_{001}| 0)$ $(3^+_{001}| 0)$ $(2_{001}| 0)$ $(3^-_{001}| 0)$

$$\begin{array}{ccccc} (6 \begin{smallmatrix} - & 0 & 0 & 1 \end{smallmatrix} | 0) & (2 \begin{smallmatrix} 0 & 1 & 0 \end{smallmatrix} | \frac{1}{2}) & (2 \begin{smallmatrix} 1 & 0 & 0 \end{smallmatrix} | \frac{1}{2}) & (2 \begin{smallmatrix} 1 & 1 & 0 \end{smallmatrix} | \frac{1}{2}) & (2 \begin{smallmatrix} 1 & -1 & 0 \end{smallmatrix} | \frac{1}{2}) \\ (2 \begin{smallmatrix} 1 & 2 & 0 \end{smallmatrix} | \frac{1}{2}) & (2 \begin{smallmatrix} 2 & 1 & 0 \end{smallmatrix} | \frac{1}{2}) & & & \\] & & & & \end{array}$$

Group 24.2.2.268 (Class 2)

Group): { (1 | n)}

$$\begin{bmatrix}
(1|0) & (6^+001|0) & (3^+001|0) & (2_001|0) & (3^-001|0) \\
(6^-001|0) & (2_010|\tfrac{1}{2}) & (2_100|\tfrac{1}{2}) & (2_110|\tfrac{1}{2}) & (2_1-10|\tfrac{1}{2}) \\
(2_120|\tfrac{1}{2}) & (2_210|\tfrac{1}{2}) & (1|0)' & (6^+001|0)' & (3^+001|0)' \\
(2_001|0)' & (3^-001|0)' & (6^-001|0)' & (2_010|\tfrac{1}{2})' & (2_100|\tfrac{1}{2})' \\
(2_110|\tfrac{1}{2})' & (2_1-10|\tfrac{1}{2})' & (2_120|\tfrac{1}{2})' & (2_210|\tfrac{1}{2})' &
\end{bmatrix}$$

Group 24.2.3.269 (Class 3)

Group): { (1 | n)}

$$\begin{bmatrix}
(1|0) & (6^+001|0) & (3^+001|0) & (2_001|0) & (3^-001|0) \\
(6^-001|0) & (2_010|\tfrac{1}{2}) & (2_100|\tfrac{1}{2}) & (2_110|\tfrac{1}{2}) & (2_1-10|\tfrac{1}{2}) \\
(2_120|\tfrac{1}{2}) & (2_210|\tfrac{1}{2}) & (\overline{1}|0)' & (\overline{6}^+001|0)' & (\overline{3}^+001|0)' \\
(m_001|0)' & (\overline{3}^-001|0)' & (\overline{6}^-001|0)' & (m_010|\tfrac{1}{2})' & (m_100|\tfrac{1}{2})' \\
(m_110|\tfrac{1}{2})' & (m_1-10|\tfrac{1}{2})' & (m_120|\tfrac{1}{2})' & (m_210|\tfrac{1}{2})' &
\end{bmatrix}$$

Group 24.3.1.270 (Nonmagnetic spacetime group):

$$\{ (1 \mid n) \}$$

$$\begin{bmatrix} & (6^+ \circ \circ 1 | \frac{1}{2}) & (3^+ \circ \circ 1 | 0) & (2 \circ \circ 1 | \frac{1}{2}) & (3^- \circ \circ 1 | 0) \\ (1 | 0) & & & & \\ (6^- \circ \circ 1 | \frac{1}{2}) & (2_0 1_0 | 0) & (2_1 0_0 | 0) & (2_1 1_0 | 0) & (2_1 -1_0 | \frac{1}{2}) \\ (2_1 2_0 | \frac{1}{2}) & (2_2 1_0 | \frac{1}{2}) & & & \end{bmatrix}$$

Group 24.3.2.271 (Class 2)

Group): { (1 | n) }

$$\begin{bmatrix}
(1|0) & (6^+001|\tfrac{1}{2}) & (3^+001|0) & (2_001|\tfrac{1}{2}) & (3^-001|0) \\
(6^-001|\tfrac{1}{2}) & (2_010|0) & (2_100|0) & (2_110|0) & (2_1-10|\tfrac{1}{2}) \\
(2_120|\tfrac{1}{2}) & (2_210|\tfrac{1}{2}) & (1|0)' & (6^+001|\tfrac{1}{2})' & (3^+001|0)' \\
(2_001|\tfrac{1}{2})' & (3^-001|0)' & (6^-001|\tfrac{1}{2})' & (2_010|0)' & (2_100|0)' \\
(2_110|0)' & (2_1-10|\tfrac{1}{2})' & (2_120|\tfrac{1}{2})' & (2_210|\tfrac{1}{2})' &
\end{bmatrix}$$

Group 24.3.3.272 (Class 3)

Group): { (1 | n) }

$$\begin{bmatrix}
& & & & \\
(1|0) & (6^+001|\tfrac{1}{2}) & (3^+001|0) & (2_001|\tfrac{1}{2}) & (3^-001|0) \\
(6^-001|\tfrac{1}{2}) & (2_010|0) & (2_100|0) & (2_110|0) & (2_1-10|\tfrac{1}{2}) \\
(2_120|\tfrac{1}{2}) & (2_210|\tfrac{1}{2}) & (\bar{1}|0)' & (\bar{6}^+001|\tfrac{1}{2})' & (\bar{3}^+001|0)' \\
(m001|\tfrac{1}{2})' & (\bar{3}^-001|0)' & (\bar{6}^-001|\tfrac{1}{2})' & (m010|0)' & (m100|0)' \\
(m110|0)' & (m1-10|\tfrac{1}{2})' & (m120|\tfrac{1}{2})' & (m210|\tfrac{1}{2})' &
\end{bmatrix}$$

ੴ ਸਤਿਗੁਰ ਪ੍ਰਸਾਦਿ

POINT GROUP 25 (6mm)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 25.1.1.273 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|0)           (m100|0)           (m110|0)           (m1-10|0)
(m120|0)         (m210|0)
]
```

Group 25.1.2.274 (Class 2

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|0)           (m100|0)           (m110|0)           (m1-10|0)
(m120|0)         (m210|0)           (1|0)'             (6+001|0)'          (3+001|0)'
(2001|0)'         (3-001|0)'          (6-001|0)'          (m010|0)'          (m100|0)'
(m110|0)'         (m1-10|0)'          (m120|0)'          (m210|0)'
]
```

Group 25.1.3.275 (Class 3

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|0)           (m100|0)           (m110|0)           (m1-10|0)
(m120|0)         (m210|0)           (2010|0)'          (2100|0)'          (2110|0)'
(21-10|0)'        (2120|0)'          (2210|0)'          (1|0)'            (6+001|0)'
(3+001|0)'        (m001|0)'          (3-001|0)'          (6-001|0)'          (m100|0)'
]
```

Group 25.2.1.276 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|½)           (m100|½)           (m110|½)           (m1-10|½)
(m120|½)         (m210|½)
]
```

Group 25.2.2.277 (Class 2

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|½)           (m100|½)           (m110|½)           (m1-10|½)
(m120|½)         (m210|½)           (1|0)'             (6+001|0)'          (3+001|0)'
(2001|0)'         (3-001|0)'          (6-001|0)'          (m010|½)'          (m100|½)'
(m110|½)'         (m1-10|½)'          (m120|½)'          (m210|½)'
]
```

Group 25.2.3.278 (Class 3

```
Group): {(1 | n)}
[
(1|0)           (6+001|0)           (3+001|0)           (2001|0)           (3-001|0)
(6-001|0)         (m010|½)           (m100|½)           (m110|½)           (m1-10|½)
(m120|½)         (m210|½)           (2010|0)'          (2100|0)'          (2110|0)'
(21-10|0)'        (2120|0)'          (2210|0)'          (1|½)'            (6+001|½)'
(3+001|½)'        (m001|½)'          (3-001|½)'          (6-001|½)'          (m100|½)'
]
```

Group 25.3.1.279 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ 0\ 0} \mid \frac{1}{2})$ $(m_{1\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ -1\ 0} \mid 0)$
 $(m_{1\ 2\ 0} \mid 0)$ $(m_{2\ 1\ 0} \mid 0)$
]

Group 25.3.2.280 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ 0\ 0} \mid \frac{1}{2})$ $(m_{1\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ -1\ 0} \mid 0)$
 $(m_{1\ 2\ 0} \mid 0)$ $(m_{2\ 1\ 0} \mid 0)$ $(1 \mid 0)'$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(3^+_{0\ 0\ 1} \mid 0)'$
 $(2_{0\ 0\ 1} \mid \frac{1}{2})'$ $(3^-_{0\ 0\ 1} \mid 0)'$ $(6^-_{0\ 0\ 1} \mid \frac{1}{2})'$ $(m_{0\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ 0\ 0} \mid \frac{1}{2})'$
 $(m_{1\ 1\ 0} \mid \frac{1}{2})'$ $(m_{1\ -1\ 0} \mid 0)'$ $(m_{1\ 2\ 0} \mid 0)'$ $(m_{2\ 1\ 0} \mid 0)'$
]

Group 25.3.3.281 (Class 3
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(6^+_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^+_{0\ 0\ 1} \mid 0)$ $(2_{0\ 0\ 1} \mid \frac{1}{2})$ $(3^-_{0\ 0\ 1} \mid 0)$
 $(6^-_{0\ 0\ 1} \mid \frac{1}{2})$ $(m_{0\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ 0\ 0} \mid \frac{1}{2})$ $(m_{1\ 1\ 0} \mid \frac{1}{2})$ $(m_{1\ -1\ 0} \mid 0)$
 $(m_{1\ 2\ 0} \mid 0)$ $(m_{2\ 1\ 0} \mid 0)$ $(2_{1\ 0\ 0} \mid 0)'$ $(2_{1\ 1\ 0} \mid 0)'$ $(2_{1\ -1\ 0} \mid 0)'$
 $(2_{1\ -1\ 0} \mid \frac{1}{2})'$ $(2_{1\ 2\ 0} \mid \frac{1}{2})'$ $(2_{2\ 1\ 0} \mid \frac{1}{2})'$ $(\bar{1} \mid \frac{1}{2})'$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$
 $(\bar{3}^+_{0\ 0\ 1} \mid \frac{1}{2})'$ $(m_{0\ 0\ 1} \mid 0)'$ $(\bar{3}^-_{0\ 0\ 1} \mid \frac{1}{2})'$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$
]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 26 (-62m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 26.1.1.282 (Nonmagnetic spacetime group):
 $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)$ $(m_{0\ 0\ 1} \mid 0)$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$
 $(m_{1\ 0\ 0} \mid 0)$ $(m_{1\ 1\ 0} \mid 0)$
]

Group 26.1.2.283 (Class 2
Group): $\{(1 \mid n)\}$
[
 $(1 \mid 0)$ $(3^+_{0\ 0\ 1} \mid 0)$ $(3^-_{0\ 0\ 1} \mid 0)$ $(2_{1\ -1\ 0} \mid 0)$ $(2_{1\ 2\ 0} \mid 0)$
 $(2_{2\ 1\ 0} \mid 0)$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)$ $(m_{0\ 0\ 1} \mid 0)$ $(\bar{6}^-_{0\ 0\ 1} \mid 0)$ $(m_{0\ 1\ 0} \mid 0)$
 $(m_{1\ 0\ 0} \mid 0)$ $(m_{1\ 1\ 0} \mid 0)$ $(1 \mid 0)'$ $(3^+_{0\ 0\ 1} \mid 0)'$ $(3^-_{0\ 0\ 1} \mid 0)'$
 $(2_{1\ -1\ 0} \mid 0)'$ $(2_{1\ 2\ 0} \mid 0)'$ $(2_{2\ 1\ 0} \mid 0)'$ $(\bar{6}^+_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 0\ 1} \mid 0)'$
 $(\bar{6}^-_{0\ 0\ 1} \mid 0)'$ $(m_{0\ 1\ 0} \mid 0)'$ $(m_{1\ 0\ 0} \mid 0)'$ $(m_{1\ 1\ 0} \mid 0)'$
]

Group 26.1.3.284 (Class 3

Group): $\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid 0)$	$(2_{1\ 2\ 0} \mid 0)$
$(2_{2\ 1\ 0} \mid 0)$	$(\bar{6}^+_{0\ 0\ 1} \mid 0)$	$(m_{0\ 0\ 1} \mid 0)$	$(\bar{6}^-_{0\ 0\ 1} \mid 0)$	$(m_{0\ 1\ 0} \mid 0)$
$(m_{1\ 0\ 0} \mid 0)$	$(m_{1\ 1\ 0} \mid 0)$	$(6^+_{0\ 0\ 1} \mid 0)'$	$(2_{0\ 0\ 1} \mid 0)'$	$(6^-_{0\ 0\ 1} \mid 0)'$
$(2_{0\ 1\ 0} \mid 0)'$	$(2_{1\ 0\ 0} \mid 0)'$	$(2_{1\ 1\ 0} \mid 0)'$	$(\bar{1} \mid 0)'$	$(\bar{3}^+_{0\ 0\ 1} \mid 0)'$
$(\bar{3}^-_{0\ 0\ 1} \mid 0)'$	$(m_{1-1\ 0} \mid 0)'$	$(m_{1\ 2\ 0} \mid 0)'$	$(m_{2\ 1\ 0} \mid 0)'$	

Group 26.2.1.285 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$
$(2_{2\ 1\ 0} \mid \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \mid 0)$	$(m_{0\ 0\ 1} \mid 0)$	$(\bar{6}^-_{0\ 0\ 1} \mid 0)$	$(m_{0\ 1\ 0} \mid \frac{1}{2})$
$(m_{1\ 0\ 0} \mid \frac{1}{2})$	$(m_{1\ 1\ 0} \mid \frac{1}{2})$			

]

Group 26.2.2.286 (Class 2

Group): $\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$
$(2_{2\ 1\ 0} \mid \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \mid 0)$	$(m_{0\ 0\ 1} \mid 0)$	$(\bar{6}^-_{0\ 0\ 1} \mid 0)$	$(m_{0\ 1\ 0} \mid \frac{1}{2})$
$(m_{1\ 0\ 0} \mid \frac{1}{2})$	$(m_{1\ 1\ 0} \mid \frac{1}{2})$	$(1 \mid 0)'$	$(3^+_{0\ 0\ 1} \mid 0)'$	$(3^-_{0\ 0\ 1} \mid 0)'$
$(2_{1-1\ 0} \mid \frac{1}{2})'$	$(2_{1\ 2\ 0} \mid \frac{1}{2})'$	$(2_{2\ 1\ 0} \mid \frac{1}{2})'$	$(\bar{6}^+_{0\ 0\ 1} \mid 0)'$	$(m_{0\ 0\ 1} \mid 0)'$
$(\bar{6}^-_{0\ 0\ 1} \mid 0)'$	$(m_{0\ 1\ 0} \mid \frac{1}{2})'$	$(m_{1\ 0\ 0} \mid \frac{1}{2})'$	$(m_{1\ 1\ 0} \mid \frac{1}{2})'$	

]

Group 26.2.3.287 (Class 3

Group): $\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$
$(2_{2\ 1\ 0} \mid \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \mid 0)$	$(m_{0\ 0\ 1} \mid 0)$	$(\bar{6}^-_{0\ 0\ 1} \mid 0)'$	$(m_{0\ 1\ 0} \mid \frac{1}{2})$
$(m_{1\ 0\ 0} \mid \frac{1}{2})$	$(m_{1\ 1\ 0} \mid \frac{1}{2})$	$(6^+_{0\ 0\ 1} \mid 0)'$	$(2_{0\ 0\ 1} \mid 0)'$	$(6^-_{0\ 0\ 1} \mid 0)'$
$(2_{0\ 1\ 0} \mid \frac{1}{2})'$	$(2_{1\ 0\ 0} \mid \frac{1}{2})'$	$(2_{1\ 1\ 0} \mid \frac{1}{2})'$	$(\bar{1} \mid 0)'$	$(\bar{3}^+_{0\ 0\ 1} \mid 0)'$
$(\bar{3}^-_{0\ 0\ 1} \mid 0)'$	$(m_{1-1\ 0} \mid \frac{1}{2})'$	$(m_{1\ 2\ 0} \mid \frac{1}{2})'$	$(m_{2\ 1\ 0} \mid \frac{1}{2})'$	

]

Group 26.3.1.288 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$
$(2_{2\ 1\ 0} \mid \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})$	$(m_{0\ 0\ 1} \mid \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})$	$(m_{0\ 1\ 0} \mid 0)$
$(m_{1\ 0\ 0} \mid 0)$	$(m_{1\ 1\ 0} \mid 0)$			

]

Group 26.3.2.289 (Class 2

Group): $\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$
$(2_{2\ 1\ 0} \mid \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})$	$(m_{0\ 0\ 1} \mid \frac{1}{2})$	$(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})$	$(m_{0\ 1\ 0} \mid 0)$
$(m_{1\ 0\ 0} \mid 0)$	$(m_{1\ 1\ 0} \mid 0)$	$(1 \mid 0)'$	$(3^+_{0\ 0\ 1} \mid 0)'$	$(3^-_{0\ 0\ 1} \mid 0)'$
$(2_{1-1\ 0} \mid \frac{1}{2})'$	$(2_{1\ 2\ 0} \mid \frac{1}{2})'$	$(2_{2\ 1\ 0} \mid \frac{1}{2})'$	$(\bar{6}^+_{0\ 0\ 1} \mid \frac{1}{2})'$	$(m_{0\ 0\ 1} \mid \frac{1}{2})'$
$(\bar{6}^-_{0\ 0\ 1} \mid \frac{1}{2})'$	$(m_{0\ 1\ 0} \mid 0)'$	$(m_{1\ 0\ 0} \mid 0)'$	$(m_{1\ 1\ 0} \mid 0)'$	

]

Group 26.3.3.290 (Class 3

Group): $\{(1 \mid n)\}$

$(1 \mid 0)$	$(3^+_{0\ 0\ 1} \mid 0)$	$(3^-_{0\ 0\ 1} \mid 0)$	$(2_{1-1\ 0} \mid \frac{1}{2})$	$(2_{1\ 2\ 0} \mid \frac{1}{2})$

$(2_{210} \frac{1}{2})$	$(\bar{6}^+_{001} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(\bar{6}^-_{001} \frac{1}{2})$	$(m_010 0)$
$(m_{100} 0)$	$(m_{110} 0)$	$(6^+_{001} 0)$	$(2_{001} 0)$	$(6^-_{001} 0)$
$(2_{010} \frac{1}{2})'$	$(2_{100} \frac{1}{2})'$	$(2_{110} \frac{1}{2})'$	$(\bar{1} \frac{1}{2})'$	$(\bar{3}^+_{001} \frac{1}{2})'$
$(\bar{3}^-_{001} \frac{1}{2})'$	$(m_{1-10} 0)'$	$(m_{120} 0)'$	$(m_{210} 0)'$	
]				

Group 26.4.1.291 (Nonmagnetic spacetime group):

{(1 | n)}

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{6}^+_{001} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(\bar{6}^-_{001} \frac{1}{2})$	$(m_{010} \frac{1}{2})$
$(m_{100} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(1 0)'$	$(3^+_{001} 0)'$	$(3^-_{001} 0)'$
$(2_{1-10} 0)'$	$(2_{120} 0)'$	$(2_{210} 0)'$	$(\bar{6}^+_{001} \frac{1}{2})'$	$(m_{001} \frac{1}{2})'$
$(\bar{6}^-_{001} \frac{1}{2})'$	$(m_{1-10} \frac{1}{2})'$	$(m_{120} \frac{1}{2})'$	$(m_{210} \frac{1}{2})'$	
]				

Group 26.4.2.292 (Class 2

Group): {(1 | n)}

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{6}^+_{001} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(\bar{6}^-_{001} \frac{1}{2})$	$(m_{010} \frac{1}{2})$
$(m_{100} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(1 0)'$	$(3^+_{001} 0)'$	$(3^-_{001} 0)'$
$(2_{1-10} 0)'$	$(2_{120} 0)'$	$(2_{210} 0)'$	$(\bar{6}^+_{001} \frac{1}{2})'$	$(m_{001} \frac{1}{2})'$
$(\bar{6}^-_{001} \frac{1}{2})'$	$(m_{1-10} \frac{1}{2})'$	$(m_{120} \frac{1}{2})'$	$(m_{210} \frac{1}{2})'$	
]				

Group 26.4.3.293 (Class 3

Group): {(1 | n)}

$(1 0)$	$(3^+_{001} 0)$	$(3^-_{001} 0)$	$(2_{1-10} 0)$	$(2_{120} 0)$
$(2_{210} 0)$	$(\bar{6}^+_{001} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(\bar{6}^-_{001} \frac{1}{2})$	$(m_{010} \frac{1}{2})$
$(m_{100} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(6^+_{001} 0)'$	$(2_{001} 0)'$	$(6^-_{001} 0)'$
$(2_{010} 0)'$	$(2_{100} 0)'$	$(2_{110} 0)'$	$(\bar{1} \frac{1}{2})'$	$(\bar{3}^+_{001} \frac{1}{2})'$
$(\bar{3}^-_{001} \frac{1}{2})'$	$(m_{1-10} \frac{1}{2})'$	$(m_{120} \frac{1}{2})'$	$(m_{210} \frac{1}{2})'$	
]				

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

POINT GROUP 27 (6/mmm)

%%%%%%%%%%%%%%

%%%%%%%%%%%%%%

Group 27.1.1.294 (Nonmagnetic spacetime group):

{(1 | n)}

$(1 0)$	$(6^+_{001} 0)$	$(3^+_{001} 0)$	$(2_{001} 0)$	$(3^-_{001} 0)$
$(6^-_{001} 0)$	$(2_{010} 0)$	$(2_{100} 0)$	$(2_{110} 0)$	$(2_{1-10} 0)$
$(2_{120} 0)$	$(2_{210} 0)$	$(\bar{1} 0)$	$(\bar{6}^+_{001} 0)$	$(\bar{3}^+_{001} 0)$
$(m_{001} 0)$	$(\bar{3}^-_{001} 0)$	$(\bar{6}^-_{001} 0)$	$(m_{010} 0)$	$(m_{100} 0)$
$(m_{110} 0)$	$(m_{1-10} 0)$	$(m_{120} 0)$	$(m_{210} 0)$	
]				

Group 27.1.2.295 (Class 2 Group):

```

{(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|0) (2100|0) (2110|0) (21-10|0)
(2120|0) (2210|0) (1|0) (6+001|0) (3+001|0)
(m001|0) (3-001|0) (6-001|0) (m010|0) (m100|0)
(m110|0) (m1-10|0) (m120|0) (m210|0) (1|0)'
(6+001|0)' (3+001|0)' (2001|0)' (3-001|0)' (6-001|0)'
(2010|0)' (2100|0)' (2110|0)' (21-10|0)' (2120|0)'
(2210|0)' (1|0)' (6+001|0)' (3+001|0)' (m001|0)'
(3-001|0)' (6-001|0)' (m010|0)' (m100|0)' (m110|0)'
(m1-10|0)' (m120|0)' (m210|0)'
]
-----
```

Group 27.2.1.296 (Nonmagnetic spacetime group):

```

{(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|½) (2100|½) (2110|½) (21-10|½)
(2120|½) (2210|½) (1|0) (6+001|0) (3+001|0)
(m001|0) (3-001|0) (6-001|0) (m010|½) (m100|½)
(m110|½) (m1-10|½) (m120|½) (m210|½)
]
```

Group 27.2.2.297 (Class 2

Group): {(1 | n)}

```

[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|½) (2100|½) (2110|½) (21-10|½)
(2120|½) (2210|½) (1|0) (6+001|0) (3+001|0)
(m001|0) (3-001|0) (6-001|0) (m010|½) (m100|½)
(m110|½) (m1-10|½) (m120|½) (m210|½) (1|0)'
(6+001|0)' (3+001|0)' (2001|0)' (3-001|0)' (6-001|0)'
(2010|½)' (2100|½)' (2110|½)' (21-10|½)' (2120|½)'
(2210|½)' (1|0)' (6+001|0)' (3+001|0)' (m001|0)'
(3-001|0)' (6-001|0)' (m010|½)' (m100|½)' (m110|½)'
(m1-10|½)' (m120|½)' (m210|½)'
]
```

Group 27.3.1.298 (Nonmagnetic spacetime group):

```

{(1 | n)}
[
(1|0) (6+001|½) (3+001|0) (2001|½) (3-001|0)
(6-001|½) (2010|0) (2100|0) (2110|0) (21-10|½)
(2120|½) (2210|½) (1|0) (6+001|½) (3+001|0)
(m001|½) (3-001|0) (6-001|½) (m010|0) (m100|0)
(m110|0) (m1-10|½) (m120|½) (m210|½)
]
```

Group 27.3.2.299 (Class 2

Group): {(1 | n)}

```

[
(1|0) (6+001|½) (3+001|0) (2001|½) (3-001|0)
(6-001|½) (2010|0) (2100|0) (2110|0) (21-10|½)
(2120|½) (2210|½) (1|0) (6+001|½) (3+001|0)
(m001|½) (3-001|0) (6-001|½) (m010|0) (m100|0)
(m110|0) (m1-10|½) (m120|½) (m210|½) (1|0)'
(6+001|½)' (3+001|0)' (2001|½)' (3-001|0)' (6-001|½)'
(2010|0)' (2100|0)' (2110|0)' (21-10|½)' (2120|½)'
(2210|½)' (1|0)' (6+001|½)' (3+001|0)' (m001|½)'
(3-001|0)' (6-001|½)' (m010|0)' (m100|0)' (m110|0)'
(m1-10|½)' (m120|½)' (m210|0)'
]
```

$(m_{1-10} | \frac{1}{2})'$ $(m_{120} | \frac{1}{2})'$ $(m_{210} | \frac{1}{2})'$
]

Group 27.4.1.300 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|0) (2100|0) (2110|0) (21-10|0)
(2120|0) (2210|0) (1|1/2) (6+001|1/2) (3+001|1/2)
(m001|1/2) (3-001|1/2) (6-001|1/2) (m010|1/2) (m100|1/2)
(m110|1/2) (m1-10|1/2) (m120|1/2) (m210|1/2)
]
```

Group 27.4.2.301 (Class 2

```
Group): {(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|0) (2100|0) (2110|0) (21-10|0)
(2120|0) (2210|0) (1|1/2) (6+001|1/2) (3+001|1/2)
(m001|1/2) (3-001|1/2) (6-001|1/2) (m010|1/2) (m100|1/2)
(m110|1/2) (m1-10|1/2) (m120|1/2) (m210|1/2) (1|0)'
(6+001|0)' (3+001|0)' (2001|0)' (3-001|0)' (6-001|0)'
(2010|0)' (2100|0)' (2110|0)' (21-10|0)' (2120|0)'
(2210|0)' (1|1/2)' (6+001|1/2)' (3+001|1/2)' (m001|1/2)'
(3-001|1/2)' (6-001|1/2)' (m010|1/2)' (m100|1/2)' (m110|1/2)'
(m1-10|1/2)' (m120|1/2)' (m210|1/2)'
]
```

Group 27.5.1.302 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|1/2) (2100|1/2) (2110|1/2) (21-10|1/2)
(2120|1/2) (2210|1/2) (1|1/2) (6+001|1/2) (3+001|1/2)
(m001|1/2) (3-001|1/2) (6-001|1/2) (m010|0) (m100|0)
(m110|0) (m1-10|0) (m120|0) (m210|0)
]
```

Group 27.5.2.303 (Class 2

```
Group): {(1 | n)}
[
(1|0) (6+001|0) (3+001|0) (2001|0) (3-001|0)
(6-001|0) (2010|1/2) (2100|1/2) (2110|1/2) (21-10|1/2)
(2120|1/2) (2210|1/2) (1|1/2) (6+001|1/2) (3+001|1/2)
(m001|1/2) (3-001|1/2) (6-001|1/2) (m010|0) (m100|0)
(m110|0) (m1-10|0) (m120|0) (m210|0) (1|0)'
(6+001|0)' (3+001|0)' (2001|0)' (3-001|0)' (6-001|0)'
(2010|1/2)' (2100|1/2)' (2110|1/2)' (21-10|1/2)' (2120|1/2)'
(2210|1/2)' (1|1/2)' (6+001|1/2)' (3+001|1/2)' (m001|1/2)'
(3-001|1/2)' (6-001|1/2)' (m010|0)' (m100|0)' (m110|0)'
(m1-10|0)' (m120|0)' (m210|0)'
]
```

Group 27.6.1.304 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0) (6+001|1/2) (3+001|0) (2001|1/2) (3-001|0)
(6-001|1/2) (2010|0) (2100|0) (2110|0) (21-10|1/2)
(2120|1/2) (2210|1/2) (1|1/2) (6+001|0) (3+001|1/2)
]
```

$(m_{0\ 0\ 1} 0)$	$(\bar{3}_{-0\ 0\ 1} \frac{1}{2})$	$(\bar{6}_{-0\ 0\ 1} 0)$	$(m_{0\ 1\ 0} \frac{1}{2})$	$(m_{1\ 0\ 0} \frac{1}{2})$
$(m_{1\ 1\ 0} \frac{1}{2})$	$(m_{1-1\ 0} 0)$	$(m_{1\ 2\ 0} 0)$	$(m_{2\ 1\ 0} 0)$	
]				

Group 27.6.2.305 (Class 2

Group): $\{(1 | n)\}$

$(1 0)$	$(6^+_{0\ 0\ 1} \frac{1}{2})$	$(3^+_{0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} \frac{1}{2})$	$(3^-_{0\ 0\ 1} 0)$
$(6^-_{0\ 0\ 1} \frac{1}{2})$	$(2_{0\ 1\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(2_{1\ 1\ 0} 0)$	$(2_{1-1\ 0} \frac{1}{2})$
$(2_{1\ 2\ 0} \frac{1}{2})$	$(2_{2\ 1\ 0} \frac{1}{2})$	$(\bar{1} \frac{1}{2})$	$(\bar{6}^+_{0\ 0\ 1} 0)$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})$
$(m_{0\ 0\ 1} 0)$	$(\bar{3}_{-0\ 0\ 1} \frac{1}{2})$	$(\bar{6}_{-0\ 0\ 1} 0)$	$(m_{0\ 1\ 0} \frac{1}{2})$	$(m_{1\ 0\ 0} \frac{1}{2})$
$(m_{1\ 1\ 0} \frac{1}{2})$	$(m_{1-1\ 0} 0)$	$(m_{1\ 2\ 0} 0)$	$(m_{2\ 1\ 0} 0)$	$(1 0)'$
$(6^+_{0\ 0\ 1} \frac{1}{2})'$	$(3^+_{0\ 0\ 1} 0)'$	$(2_{0\ 0\ 1} \frac{1}{2})'$	$(3^-_{0\ 0\ 1} 0)'$	$(6^-_{0\ 0\ 1} \frac{1}{2})'$
$(2_{0\ 1\ 0} 0)'$	$(2_{1\ 0\ 0} 0)'$	$(2_{1\ 1\ 0} 0)'$	$(2_{1-1\ 0} \frac{1}{2})'$	$(2_{1\ 2\ 0} \frac{1}{2})'$
$(2_{2\ 1\ 0} \frac{1}{2})'$	$(\bar{1} \frac{1}{2})'$	$(\bar{6}^+_{0\ 0\ 1} 0)'$	$(\bar{3}^+_{0\ 0\ 1} \frac{1}{2})'$	$(m_{0\ 0\ 1} 0)'$
$(\bar{3}_{-0\ 0\ 1} \frac{1}{2})'$	$(\bar{6}_{-0\ 0\ 1} 0)'$	$(m_{0\ 1\ 0} \frac{1}{2})'$	$(m_{1\ 0\ 0} \frac{1}{2})'$	$(m_{1\ 1\ 0} \frac{1}{2})'$
$(m_{1-1\ 0} 0)'$	$(m_{1\ 2\ 0} 0)'$	$(m_{2\ 1\ 0} 0)'$		

%%%%%%%%%%%%%%
%%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%%

POINT GROUP 28 (23)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%%

Group 28.1.1.306 (Nonmagnetic spacetime group):

$\{(1 n)\}$	[
$(1 0)$	$(2_{0\ 0\ 1} 0)$	$(2_{0\ 1\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$
$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$	$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$
$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$			
]				

Group 28.1.2.307 (Class 2

Group): $\{(1 | n)\}$

[
$(1 0)$	$(2_{0\ 0\ 1} 0)$	$(2_{0\ 1\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$
$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$	$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$
$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$	$(1 0)'$	$(2_{0\ 0\ 1} 0)'$	$(2_{0\ 1\ 0} 0)'$
$(2_{1\ 0\ 0} 0)'$	$(3^{+1\ 1\ 1} 0)'$	$(3^{-1\ 1\ 1} 0)'$	$(3^{+1\ 1\ -1} 0)'$	$(3^{-1\ 1\ -1} 0)'$
$(3^{+1\ -1\ 1} 0)'$	$(3^{-1\ -1\ 1} 0)'$	$(3^{+1\ -1\ -1} 0)'$	$(3^{-1\ -1\ -1} 0)'$	
]				

Group 28.1.3.308 (Class 3

Group): $\{(1 | n)\}$

[
$(1 0)$	$(2_{0\ 0\ 1} 0)$	$(2_{0\ 1\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$
$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$	$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$
$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$	$(\bar{1} 0)'$	$(m_{0\ 0\ 1} 0)'$	$(m_{0\ 1\ 0} 0)'$
$(m_{1\ 0\ 0} 0)'$	$(\bar{3}^{+1\ 1\ 1} 0)'$	$(\bar{3}^{-1\ 1\ 1} 0)'$	$(\bar{3}^{+1\ 1\ -1} 0)'$	$(\bar{3}^{-1\ 1\ -1} 0)'$
$(\bar{3}^{+1\ -1\ 1} 0)'$	$(\bar{3}^{-1\ -1\ 1} 0)'$	$(\bar{3}^{+1\ -1\ -1} 0)'$	$(\bar{3}^{-1\ -1\ -1} 0)'$	
]				

Group 28.1.4.309 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(2_0 0 1 \mid 0)$ $(2_0 1 0 \mid 0)$ $(2_1 0 0 \mid 0)$ $(3^+ 1 1 1 \mid 0)$
 $(3^- 1 1 1 \mid 0)$ $(3^+ 1 1 -1 \mid 0)$ $(3^- 1 1 -1 \mid 0)$ $(3^+ 1 -1 1 \mid 0)$ $(3^- 1 -1 1 \mid 0)$
 $(3^+ 1 -1 -1 \mid 0)$ $(3^- 1 -1 -1 \mid 0)$ $(4^+ 0 0 1 \mid 0)'$ $(4^- 0 0 1 \mid 0)'$ $(4^+ 0 1 0 \mid 0)'$
 $(4^- 0 1 0 \mid 0)'$ $(4^+ 1 0 0 \mid 0)'$ $(4^- 1 0 0 \mid 0)'$ $(2_0 1 1 \mid 0)'$ $(2_0 1 -1 \mid 0)'$
 $(2_1 0 1 \mid 0)'$ $(2_1 0 -1 \mid 0)'$ $(2_1 1 0 \mid 0)'$ $(2_1 -1 0 \mid 0)'$
]

Group 28.1.5.310 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(2_0 0 1 \mid 0)$ $(2_0 1 0 \mid 0)$ $(2_1 0 0 \mid 0)$ $(3^+ 1 1 1 \mid 0)$
 $(3^- 1 1 1 \mid 0)$ $(3^+ 1 1 -1 \mid 0)$ $(3^- 1 1 -1 \mid 0)$ $(3^+ 1 -1 1 \mid 0)$ $(3^- 1 -1 1 \mid 0)$
 $(3^+ 1 -1 -1 \mid 0)$ $(3^- 1 -1 -1 \mid 0)$ $(\overline{4}^+ 0 0 1 \mid 0)'$ $(\overline{4}^- 0 0 1 \mid 0)'$ $(\overline{4}^+ 0 1 0 \mid 0)'$
 $(\overline{4}^- 0 1 0 \mid 0)'$ $(\overline{4}^+ 1 0 0 \mid 0)'$ $(\overline{4}^- 1 0 0 \mid 0)'$ $(m_0 1 1 \mid 0)'$ $(m_0 1 -1 \mid 0)'$
 $(m_1 0 1 \mid 0)'$ $(m_1 0 -1 \mid 0)'$ $(m_1 1 0 \mid 0)'$ $(m_1 -1 0 \mid 0)'$
]

Group 28.2.1.311 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(2_0 0 1 \mid 0)$ $(2_0 1 0 \mid 0)$ $(2_1 0 0 \mid 0)$ $(3^+ 1 1 1 \mid \frac{1}{3})$
 $(3^- 1 1 1 \mid \frac{2}{3})$ $(3^+ 1 1 -1 \mid \frac{2}{3})$ $(3^- 1 1 -1 \mid \frac{1}{3})$ $(3^+ 1 -1 1 \mid \frac{2}{3})$ $(3^- 1 -1 1 \mid \frac{1}{3})$
 $(3^+ 1 -1 -1 \mid \frac{1}{3})$ $(3^- 1 -1 -1 \mid \frac{2}{3})$
]

Group 28.2.2.312 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(2_0 0 1 \mid 0)$ $(2_0 1 0 \mid 0)$ $(2_1 0 0 \mid 0)$ $(3^+ 1 1 1 \mid \frac{1}{3})$
 $(3^- 1 1 1 \mid \frac{2}{3})$ $(3^+ 1 1 -1 \mid \frac{2}{3})$ $(3^- 1 1 -1 \mid \frac{1}{3})$ $(3^+ 1 -1 1 \mid \frac{2}{3})$ $(3^- 1 -1 1 \mid \frac{1}{3})$
 $(3^+ 1 -1 -1 \mid \frac{1}{3})$ $(3^- 1 -1 -1 \mid \frac{2}{3})$ $(4^+ 0 0 1 \mid 0)'$ $(4^- 0 0 1 \mid 0)'$ $(4^+ 0 1 0 \mid \frac{1}{3})'$
 $(4^- 0 1 0 \mid \frac{1}{3})'$ $(4^+ 1 0 0 \mid \frac{2}{3})'$ $(4^- 1 0 0 \mid \frac{2}{3})'$ $(2_0 1 1 \mid \frac{2}{3})'$ $(2_0 1 -1 \mid \frac{2}{3})'$
 $(2_1 0 1 \mid \frac{1}{3})'$ $(2_1 0 -1 \mid \frac{1}{3})'$ $(2_1 1 0 \mid 0)'$ $(2_1 -1 0 \mid 0)'$
]

Group 28.2.3.313 (Class 3

Group): $\{(1 \mid n)\}$

[
 $(1 \mid 0)$ $(2_0 0 1 \mid 0)$ $(2_0 1 0 \mid 0)$ $(2_1 0 0 \mid 0)$ $(3^+ 1 1 1 \mid \frac{1}{3})$
 $(3^- 1 1 1 \mid \frac{2}{3})$ $(3^+ 1 1 -1 \mid \frac{2}{3})$ $(3^- 1 1 -1 \mid \frac{1}{3})$ $(3^+ 1 -1 1 \mid \frac{2}{3})$ $(3^- 1 -1 1 \mid \frac{1}{3})$
 $(3^+ 1 -1 -1 \mid \frac{1}{3})$ $(3^- 1 -1 -1 \mid \frac{2}{3})$ $(\overline{4}^+ 0 0 1 \mid 0)'$ $(\overline{4}^- 0 0 1 \mid 0)'$ $(\overline{4}^+ 0 1 0 \mid \frac{1}{3})'$
 $(\overline{4}^- 0 1 0 \mid \frac{1}{3})'$ $(\overline{4}^+ 1 0 0 \mid \frac{2}{3})'$ $(\overline{4}^- 1 0 0 \mid \frac{2}{3})'$ $(m_0 1 1 \mid \frac{2}{3})'$ $(m_0 1 -1 \mid \frac{2}{3})'$
 $(m_1 0 1 \mid \frac{1}{3})'$ $(m_1 0 -1 \mid \frac{1}{3})'$ $(m_1 1 0 \mid 0)'$ $(m_1 -1 0 \mid 0)'$
]

%%%%%%%%%%%%%

%%%%%%%%%%%%%

%%%%%%%%%%%%%

%%%%%%%%%%%%%

POINT GROUP 29 ($m-3$)

%%%%%%%%%%%%%

%%%%%%%%%%%%%%

Group 29.1.1.314 (Nonmagnetic spacetime group):

{(1 | n)}

(1 0)	(2 _{0 0 1} 0)	(2 _{0 1 0} 0)	(2 _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)
(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)	(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)
(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	(1 0)	(m _{0 0 1} 0)	(m _{0 1 0} 0)
(m _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)	(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)
(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)	(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	

Group 29.1.2.315 (Class 2

Group): {(1 | n)}

(1 0)	(2 _{0 0 1} 0)	(2 _{0 1 0} 0)	(2 _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)
(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)	(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)
(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	(1 0)	(m _{0 0 1} 0)	(m _{0 1 0} 0)
(m _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)	(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)
(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)	(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	(1 0)'
(2 _{0 0 1} 0)'	(2 _{0 1 0} 0)'	(2 _{1 0 0} 0)'	(3 ⁺ _{1 1 1} 0)'	(3 ⁻ _{1 1 1} 0)'
(3 ⁺ _{1 1 -1} 0)'	(3 ⁻ _{1 1 -1} 0)'	(3 ⁺ _{1 -1 1} 0)'	(3 ⁻ _{1 -1 1} 0)'	(3 ⁺ _{1 -1 -1} 0)'
(3 ⁻ _{1 -1 -1} 0)'	(1 0)'	(m _{0 0 1} 0)'	(m _{0 1 0} 0)'	(m _{1 0 0} 0)'
(3 ⁺ _{1 1 1} 0)'	(3 ⁻ _{1 1 1} 0)'	(3 ⁺ _{1 1 -1} 0)'	(3 ⁻ _{1 1 -1} 0)'	(3 ⁺ _{1 -1 1} 0)'
(3 ⁻ _{1 -1 1} 0)'	(3 ⁺ _{1 -1 -1} 0)'	(3 ⁻ _{1 -1 -1} 0)'		

Group 29.1.3.316 (Class 3

Group): {(1 | n)}

(1 0)	(2 _{0 0 1} 0)	(2 _{0 1 0} 0)	(2 _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)
(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)	(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)
(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	(1 0)	(m _{0 0 1} 0)	(m _{0 1 0} 0)
(m _{1 0 0} 0)	(3 ⁺ _{1 1 1} 0)	(3 ⁻ _{1 1 1} 0)	(3 ⁺ _{1 1 -1} 0)	(3 ⁻ _{1 1 -1} 0)
(3 ⁺ _{1 -1 1} 0)	(3 ⁻ _{1 -1 1} 0)	(3 ⁺ _{1 -1 -1} 0)	(3 ⁻ _{1 -1 -1} 0)	(4 ⁺ _{0 0 1} 0)'
(4 ⁻ _{0 0 1} 0)'	(4 ⁺ _{0 1 0} 0)'	(4 ⁻ _{0 1 0} 0)'	(4 ⁺ _{1 0 0} 0)'	(4 ⁻ _{1 0 0} 0)'
(2 _{0 1 1} 0)'	(2 _{0 1 -1} 0)'	(2 _{1 0 1} 0)'	(2 _{1 0 -1} 0)'	(2 _{1 1 0} 0)'
(2 _{1 -1 0} 0)'	(4 ⁺ _{0 0 1} 0)'	(4 ⁻ _{0 0 1} 0)'	(4 ⁺ _{0 1 0} 0)'	(4 ⁻ _{0 1 0} 0)'
(4 ⁺ _{1 0 0} 0)'	(4 ⁻ _{1 0 0} 0)'	(m _{0 1 1} 0)'	(m _{0 1 -1} 0)'	(m _{1 0 1} 0)'
(m _{1 0 -1} 0)'	(m _{1 1 0} 0)'	(m _{1 -1 0} 0)'		

Group 29.2.1.317 (Nonmagnetic spacetime group):

{(1 | n)}

(1 0)	(2 _{0 0 1} 0)	(2 _{0 1 0} 0)	(2 _{1 0 0} 0)	(3 ⁺ _{1 1 1} 1/3)
(3 ⁻ _{1 1 1} 1/3)	(3 ⁺ _{1 1 -1} 1/3)	(3 ⁻ _{1 1 -1} 1/3)	(3 ⁺ _{1 -1 1} 1/3)	(3 ⁻ _{1 -1 1} 1/3)
(3 ⁺ _{1 -1 -1} 1/3)	(3 ⁻ _{1 -1 -1} 1/3)	(1 0)	(m _{0 0 1} 0)	(m _{0 1 0} 0)
(m _{1 0 0} 0)	(3 ⁺ _{1 1 1} 1/3)	(3 ⁻ _{1 1 1} 1/3)	(3 ⁺ _{1 1 -1} 1/3)	(3 ⁻ _{1 1 -1} 1/3)
(3 ⁺ _{1 -1 1} 1/3)	(3 ⁻ _{1 -1 1} 1/3)	(3 ⁺ _{1 -1 -1} 1/3)	(3 ⁻ _{1 -1 -1} 1/3)	

Group 29.2.2.318 (Class 3

Group): {(1 | n)}

(1 0)	(2 _{0 0 1} 0)	(2 _{0 1 0} 0)	(2 _{1 0 0} 0)	(3 ⁺ _{1 1 1} 1/3)
(3 ⁻ _{1 1 1} 1/3)	(3 ⁺ _{1 1 -1} 1/3)	(3 ⁻ _{1 1 -1} 1/3)	(3 ⁺ _{1 -1 1} 1/3)	(3 ⁻ _{1 -1 1} 1/3)
(3 ⁺ _{1 -1 -1} 1/3)	(3 ⁻ _{1 -1 -1} 1/3)	(1 0)	(m _{0 0 1} 0)	(m _{0 1 0} 0)
(m _{1 0 0} 0)	(3 ⁺ _{1 1 1} 1/3)	(3 ⁻ _{1 1 1} 1/3)	(3 ⁺ _{1 1 -1} 1/3)	(3 ⁻ _{1 1 -1} 1/3)
(3 ⁺ _{1 -1 1} 1/3)	(3 ⁻ _{1 -1 1} 1/3)	(3 ⁺ _{1 -1 -1} 1/3)	(3 ⁻ _{1 -1 -1} 1/3)	(4 ⁺ _{0 0 1} 0)'

$(4^{-}001 0)'$	$(4^{+}010 \frac{1}{3})'$	$(4^{-}010 \frac{1}{3})'$	$(4^{+}100 \frac{2}{3})'$	$(4^{-}100 \frac{2}{3})'$
$(2_011 \frac{2}{3})'$	$(2_01-1 \frac{2}{3})'$	$(2_101 \frac{1}{3})'$	$(2_10-1 \frac{1}{3})'$	$(2_110 0)'$
$(2_1-10 0)'$	$(\bar{4}^{+}001 0)'$	$(\bar{4}^{-}001 0)'$	$(\bar{4}^{+}010 \frac{1}{3})'$	$(\bar{4}^{-}010 \frac{1}{3})'$
$(\bar{4}^{+}100 \frac{2}{3})'$	$(\bar{4}^{-}100 \frac{2}{3})'$	$(m_011 \frac{2}{3})'$	$(m_01-1 \frac{2}{3})'$	$(m_101 \frac{1}{3})'$
$(m_10-1 \frac{1}{3})'$	$(m_110 0)'$	$(m_1-10 0)'$		

Group 29.3.1.319 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(2_001 0)$	$(2_010 0)$	$(2_100 0)$	$(3^{+}111 0)$
$(3^{-}111 0)$	$(3^{+}11-1 0)$	$(3^{-}11-1 0)$	$(3^{+}1-11 0)$	$(3^{-}1-11 0)$
$(3^{+}1-1-1 0)$	$(3^{-}1-1-1 0)$	$(\bar{1} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(m_010 \frac{1}{2})$
$(m_100 \frac{1}{2})$	$(\bar{3}^{+}111 \frac{1}{2})$	$(\bar{3}^{-}111 \frac{1}{2})$	$(\bar{3}^{+}11-1 \frac{1}{2})$	$(\bar{3}^{-}11-1 \frac{1}{2})$
$(\bar{3}^{+}1-11 \frac{1}{2})$	$(\bar{3}^{-}1-11 \frac{1}{2})$	$(\bar{3}^{+}1-1-1 \frac{1}{2})$	$(\bar{3}^{-}1-1-1 \frac{1}{2})$	

]

Group 29.3.2.320 (Class 2

Group): $\{(1 | n)\}$

$(1 0)$	$(2_001 0)$	$(2_010 0)$	$(2_100 0)$	$(3^{+}111 0)$
$(3^{-}111 0)$	$(3^{+}11-1 0)$	$(3^{-}11-1 0)$	$(3^{+}1-11 0)$	$(3^{-}1-11 0)$
$(3^{+}1-1-1 0)$	$(3^{-}1-1-1 0)$	$(\bar{1} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(m_010 \frac{1}{2})$
$(m_100 \frac{1}{2})$	$(\bar{3}^{+}111 \frac{1}{2})$	$(\bar{3}^{-}111 \frac{1}{2})$	$(\bar{3}^{+}11-1 \frac{1}{2})$	$(\bar{3}^{-}11-1 \frac{1}{2})$
$(\bar{3}^{+}1-11 \frac{1}{2})$	$(\bar{3}^{-}1-11 \frac{1}{2})$	$(\bar{3}^{+}1-1-1 \frac{1}{2})$	$(\bar{3}^{-}1-1-1 \frac{1}{2})$	$(1 0)'$
$(2_001 0)'$	$(2_010 0)'$	$(2_100 0)'$	$(3^{+}111 0)'$	$(3^{-}111 0)'$
$(3^{+}11-1 0)'$	$(3^{-}11-1 0)'$	$(3^{+}1-11 0)'$	$(3^{-}1-11 0)'$	$(3^{+}1-1-1 0)'$
$(3^{-}1-1-1 0)'$	$(\bar{1} \frac{1}{2})'$	$(m_001 \frac{1}{2})'$	$(m_010 \frac{1}{2})'$	$(m_100 \frac{1}{2})'$
$(\bar{3}^{+}111 \frac{1}{2})'$	$(\bar{3}^{-}111 \frac{1}{2})'$	$(\bar{3}^{+}11-1 \frac{1}{2})'$	$(\bar{3}^{-}11-1 \frac{1}{2})'$	$(\bar{3}^{+}11-1 \frac{1}{2})'$
$(\bar{3}^{-}1-11 \frac{1}{2})'$	$(\bar{3}^{+}1-1-1 \frac{1}{2})'$	$(\bar{3}^{-}1-1-1 \frac{1}{2})'$		

]

Group 29.3.3.321 (Class 3

Group): $\{(1 | n)\}$

$(1 0)$	$(2_001 0)$	$(2_010 0)$	$(2_100 0)$	$(3^{+}111 0)$
$(3^{-}111 0)$	$(3^{+}11-1 0)$	$(3^{-}11-1 0)$	$(3^{+}1-11 0)$	$(3^{-}1-11 0)$
$(3^{+}1-1-1 0)$	$(3^{-}1-1-1 0)$	$(\bar{1} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(m_010 \frac{1}{2})$
$(m_100 \frac{1}{2})$	$(\bar{3}^{+}111 \frac{1}{2})$	$(\bar{3}^{-}111 \frac{1}{2})$	$(\bar{3}^{+}11-1 \frac{1}{2})$	$(\bar{3}^{-}11-1 \frac{1}{2})$
$(\bar{3}^{+}1-11 \frac{1}{2})$	$(\bar{3}^{-}1-11 \frac{1}{2})$	$(\bar{3}^{+}1-1-1 \frac{1}{2})$	$(\bar{3}^{-}1-1-1 \frac{1}{2})$	$(4^{+}001 0)'$
$(4^{-}001 0)'$	$(4^{+}010 0)'$	$(4^{-}010 0)'$	$(4^{+}100 0)'$	$(4^{-}100 0)'$
$(2_011 0)'$	$(2_01-1 0)'$	$(2_101 0)'$	$(2_10-1 0)'$	$(2_110 0)'$
$(2_1-10 0)'$	$(\bar{4}^{+}001 \frac{1}{2})'$	$(\bar{4}^{-}001 \frac{1}{2})'$	$(\bar{4}^{+}010 \frac{1}{2})'$	$(\bar{4}^{-}010 \frac{1}{2})'$
$(\bar{4}^{+}100 \frac{1}{2})'$	$(\bar{4}^{-}100 \frac{1}{2})'$	$(m_011 \frac{1}{2})'$	$(m_01-1 \frac{1}{2})'$	$(m_101 \frac{1}{2})'$
$(m_10-1 \frac{1}{2})'$	$(m_110 \frac{1}{2})'$	$(m_1-10 \frac{1}{2})'$		

]

Group 29.4.1.322 (Nonmagnetic spacetime group):

$\{(1 | n)\}$

$(1 0)$	$(2_001 0)$	$(2_010 0)$	$(2_100 0)$	$(3^{+}111 \frac{1}{3})$
$(3^{-}111 \frac{2}{3})$	$(3^{+}11-1 \frac{2}{3})$	$(3^{-}11-1 \frac{1}{3})$	$(3^{+}1-11 \frac{2}{3})$	$(3^{-}1-11 \frac{1}{3})$
$(3^{+}1-1-1 \frac{1}{3})$	$(3^{-}1-1-1 \frac{2}{3})$	$(\bar{1} \frac{1}{2})$	$(m_001 \frac{1}{2})$	$(m_010 \frac{1}{2})$
$(m_100 \frac{1}{2})$	$(\bar{3}^{+}111 \frac{5}{6})$	$(\bar{3}^{-}111 \frac{1}{6})$	$(\bar{3}^{+}11-1 \frac{1}{6})$	$(\bar{3}^{-}11-1 \frac{5}{6})$
$(\bar{3}^{+}1-11 \frac{1}{6})$	$(\bar{3}^{-}1-11 \frac{5}{6})$	$(\bar{3}^{+}1-1-1 \frac{1}{6})$	$(\bar{3}^{-}1-1-1 \frac{1}{6})$	

Group 29.4.2.323 (Class 3

Group): $\{(1 | n)\}$

]

$(1 0)$	$(2_0 0_1 0)$	$(2_0 1_0 0)$	$(2_1 0_0 0)$	$(3^{+} 1_1 1_1 \frac{1}{3})$
$(3^{-} 1_1 1_1 \frac{2}{3})$	$(3^{+} 1_1 1_{-1} \frac{2}{3})$	$(3^{-} 1_1 1_{-1} \frac{1}{3})$	$(3^{+} 1_{-1} 1_1 \frac{2}{3})$	$(3^{-} 1_{-1} 1_1 \frac{1}{3})$
$(3^{+} 1_{-1} 1_{-1} \frac{1}{3})$	$(3^{-} 1_{-1} 1_{-1} \frac{2}{3})$	$(\bar{1} \frac{1}{2})$	$(m_0 0_1 \frac{1}{2})$	$(m_0 1_0 \frac{1}{2})$
$(m_1 0_0 \frac{1}{2})$	$(\bar{3}^{+} 1_1 1_1 \frac{5}{6})$	$(\bar{3}^{-} 1_1 1_1 \frac{1}{6})$	$(\bar{3}^{+} 1_1 1_{-1} \frac{1}{6})$	$(\bar{3}^{-} 1_1 1_{-1} \frac{5}{6})$
$(\bar{3}^{+} 1_{-1} 1_{-1} \frac{1}{6})$	$(\bar{3}^{-} 1_{-1} 1_{-1} \frac{5}{6})$	$(\bar{3}^{+} 1_{-1} 1_{-1} \frac{1}{6})$	$(\bar{3}^{-} 1_{-1} 1_{-1} \frac{1}{6})$	$(4^{+} 0_0 1 0)'$
$(4^{-} 0_0 1 0)'$	$(4^{+} 0_1 0 \frac{1}{3})'$	$(4^{-} 0_1 0 \frac{1}{3})'$	$(4^{+} 1_0 0 \frac{2}{3})'$	$(4^{-} 1_0 0 \frac{2}{3})'$
$(2_0 1_1 \frac{2}{3})'$	$(2_0 1_{-1} \frac{2}{3})'$	$(2_1 0_1 \frac{1}{3})'$	$(2_1 0_{-1} \frac{1}{3})'$	$(2_1 1_0 0)'$
$(2_1_{-1} 0 0)'$	$(\bar{4}^{+} 0_0 1 \frac{1}{2})'$	$(\bar{4}^{-} 0_0 1 \frac{1}{2})'$	$(\bar{4}^{+} 0_1 0 \frac{5}{6})'$	$(\bar{4}^{-} 0_1 0 \frac{5}{6})'$
$(\bar{4}^{+} 1_0 0 \frac{1}{6})'$	$(\bar{4}^{-} 1_0 0 \frac{1}{6})'$	$(m_0 1_1 \frac{1}{6})'$	$(m_0 1_{-1} \frac{1}{6})'$	$(m_1 0_1 \frac{5}{6})'$
$(m_1 0_{-1} \frac{5}{6})'$	$(m_1 1_0 \frac{1}{2})'$	$(m_1_{-1} 0 \frac{1}{2})'$		

]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 30 (432)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 30.1.1.324 (Nonmagnetic spacetime group):

$\{(1 n)\}$	[
$(1 0)$	$(4^{+} 0_0 1 0)$	$(2_0 0_1 0)$	$(4^{-} 0_0 1 0)$	$(4^{+} 0_1 0 0)$
$(2_0 1_0 0)$	$(4^{-} 0_1 0 0)$	$(4^{+} 1_0 0 0)$	$(2_1 0_0 0)$	$(4^{-} 1_0 0 0)$
$(2_0 1_1 0)$	$(2_0 1_{-1} 0)$	$(2_1 0_1 0)$	$(2_1 0_{-1} 0)$	$(2_1 1_0 0)$
$(2_1_{-1} 0 0)$	$(3^{+} 1_1 1_1 0)$	$(3^{-} 1_1 1_1 0)$	$(3^{+} 1_1 1_{-1} 0)$	$(3^{-} 1_1 1_{-1} 0)$
$(3^{+} 1_{-1} 1_1 0)$	$(3^{-} 1_{-1} 1_1 0)$	$(3^{+} 1_{-1} 1_{-1} 0)$	$(3^{-} 1_{-1} 1_{-1} 0)$	

]

Group 30.1.2.325 (Class 2

Group): $\{(1 n)\}$	[
$(1 0)$	$(4^{+} 0_0 1 0)$	$(2_0 0_1 0)$	$(4^{-} 0_0 1 0)$	$(4^{+} 0_1 0 0)$
$(2_0 1_0 0)$	$(4^{-} 0_1 0 0)$	$(4^{+} 1_0 0 0)$	$(2_1 0_0 0)$	$(4^{-} 1_0 0 0)$
$(2_0 1_1 0)$	$(2_0 1_{-1} 0)$	$(2_1 0_1 0)$	$(2_1 0_{-1} 0)$	$(2_1 1_0 0)$
$(2_1_{-1} 0 0)$	$(3^{+} 1_1 1_1 0)$	$(3^{-} 1_1 1_1 0)$	$(3^{+} 1_1 1_{-1} 0)$	$(3^{-} 1_1 1_{-1} 0)$
$(3^{+} 1_{-1} 1_1 0)$	$(3^{-} 1_{-1} 1_1 0)$	$(3^{+} 1_{-1} 1_{-1} 0)$	$(3^{-} 1_{-1} 1_{-1} 0)$	$(1 0)'$
$(4^{+} 0_0 1 0)'$	$(2_0 0_1 0)'$	$(4^{-} 0_0 1 0)'$	$(4^{+} 0_1 0 0)'$	$(2_0 1_0 0)'$
$(4^{-} 0_1 0 0)'$	$(4^{+} 1_0 0 0)'$	$(2_1 0_0 0)'$	$(4^{-} 1_0 0 0)'$	$(2_0 1_1 0)'$
$(2_0 1_{-1} 0)'$	$(2_1 0_1 0)'$	$(2_1 0_{-1} 0)'$	$(2_1 1_0 0)'$	$(2_1_{-1} 0 0)'$
$(3^{+} 1_1 1_1 0)'$	$(3^{-} 1_1 1_1 0)'$	$(3^{+} 1_1 1_{-1} 0)'$	$(3^{-} 1_1 1_{-1} 0)'$	$(3^{+} 1_{-1} 1_1 0)'$
$(3^{-} 1_{-1} 1_1 0)'$	$(3^{+} 1_{-1} 1_{-1} 0)'$	$(3^{-} 1_{-1} 1_{-1} 0)'$		

]

Group 30.1.3.326 (Class 3

Group): $\{(1 n)\}$	[
$(1 0)$	$(4^{+} 0_0 1 0)$	$(2_0 0_1 0)$	$(4^{-} 0_0 1 0)$	$(4^{+} 0_1 0 0)$
$(2_0 1_0 0)$	$(4^{-} 0_1 0 0)$	$(4^{+} 1_0 0 0)$	$(2_1 0_0 0)$	$(4^{-} 1_0 0 0)$
$(2_0 1_1 0)$	$(2_0 1_{-1} 0)$	$(2_1 0_1 0)$	$(2_1 0_{-1} 0)$	$(2_1 1_0 0)$
$(2_1_{-1} 0 0)$	$(3^{+} 1_1 1_1 0)$	$(3^{-} 1_1 1_1 0)$	$(3^{+} 1_1 1_{-1} 0)$	$(3^{-} 1_1 1_{-1} 0)$
$(3^{+} 1_{-1} 1_1 0)$	$(3^{-} 1_{-1} 1_1 0)$	$(3^{+} 1_{-1} 1_{-1} 0)$	$(3^{-} 1_{-1} 1_{-1} 0)$	$(\bar{1} 0)'$
$(\bar{4}^{+} 0_0 1 0)'$	$(m_0 0_1 0)'$	$(\bar{4}^{-} 0_0 1 0)'$	$(\bar{4}^{+} 0_1 0 0)'$	$(m_0 1_0 0)'$

$(\bar{4}^{-010} 0)'$	$(\bar{4}^{+100} 0)'$	$(m_{100} 0)'$	$(\bar{4}^{-100} 0)'$	$(m_{011} 0)'$
$(m_{01-1} 0)'$	$(m_{101} 0)'$	$(m_{10-1} 0)'$	$(m_{110} 0)'$	$(m_{1-10} 0)'$
$(\bar{3}^{+111} 0)'$	$(\bar{3}^{-111} 0)'$	$(\bar{3}^{+11-1} 0)'$	$(\bar{3}^{-11-1} 0)'$	$(\bar{3}^{+1-11} 0)'$
$(\bar{3}^{-1-11} 0)'$	$(\bar{3}^{+1-1-1} 0)'$	$(\bar{3}^{-1-1-1} 0)'$		

]

Group 30.2.1.327 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)          (4+001|½)          (2001|0)          (4-001|½)          (4+010|½)
(2010|0)        (4-010|½)          (4+100|½)          (2100|0)          (4-100|½)
(2011|½)        (201-1|½)          (2101|½)          (210-1|½)          (2110|½)
(21-10|½)        (3+111|0)          (3-111|0)          (3+11-1|0)          (3-11-1|0)
(3+1-11|0)        (3-1-11|0)          (3+1-1-1|0)          (3-1-1-1|0)
]
```

Group 30.2.2.328 (Class 2

```
Group): {(1 | n)}
[
(1|0)          (4+001|½)          (2001|0)          (4-001|½)          (4+010|½)
(2010|0)        (4-010|½)          (4+100|½)          (2100|0)          (4-100|½)
(2011|½)        (201-1|½)          (2101|½)          (210-1|½)          (2110|½)
(21-10|½)        (3+111|0)          (3-111|0)          (3+11-1|0)          (3-11-1|0)
(3+1-11|0)        (3-1-11|0)          (3+1-1-1|0)          (3-1-1-1|0)          (1|0)'
(4+001|½)'       (2001|0)'          (4-001|½)'          (4+010|½)'          (2010|0)'
(4-010|½)'       (4+100|½)'          (2100|0)'          (4-100|½)'          (2011|½)'
(201-1|½)'       (2101|½)'          (210-1|½)'          (2110|½)'          (21-10|½)'
(3+111|0)'       (3-111|0)'          (3+11-1|0)'          (3-11-1|0)'          (3+1-11|0)'
(3-1-11|0)'       (3+1-1-1|0)'          (3-1-1-1|0)'          ]
```

Group 30.2.3.329 (Class 3

```
Group): {(1 | n)}
[
(1|0)          (4+001|½)          (2001|0)          (4-001|½)          (4+010|½)
(2010|0)        (4-010|½)          (4+100|½)          (2100|0)          (4-100|½)
(2011|½)        (201-1|½)          (2101|½)          (210-1|½)          (2110|½)
(21-10|½)        (3+111|0)          (3-111|0)          (3+11-1|0)          (3-11-1|0)
(3+1-11|0)        (3-1-11|0)          (3+1-1-1|0)          (3-1-1-1|0)          (1|0)'
(\bar{4}+001|½)'      (m001|0)'          (\bar{4}^{-001}|½)'          (\bar{4}^{+010}|½)'          (m010|0)'
(\bar{4}^{-010}|½)'      (\bar{4}^{+100}|½)'          (m100|0)'          (\bar{4}^{-100}|½)'          (m011|½)'
(m01-1|½)'       (m101|½)'          (m10-1|½)'          (m110|½)'          (m1-10|½)'
(\bar{3}^{+111}|0)'      (\bar{3}^{-111}|0)'          (\bar{3}^{+11-1}|0)'          (\bar{3}^{-11-1}|0)'          (\bar{3}^{+1-11}|0)'
(\bar{3}^{-1-11}|0)'      (\bar{3}^{+1-1-1}|0)'          (\bar{3}^{-1-1-1}|0)'          ]
```

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 31 (-43m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 31.1.1.330 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)      (2_0 0 1|0)      (2_0 1 0|0)      (2_1 0 0|0)      (3^+ 1 1 1|0)
(3^- 1 1 1|0) (3^+ 1 1 - 1|0) (3^- 1 1 - 1|0) (3^+ 1 - 1 1|0) (3^- 1 - 1 1|0)
(3^+ 1 - 1 - 1|0) (3^- 1 - 1 - 1|0) (4^- 0 0 1|0) (4^- 0 0 1|0) (4^+ 0 1 0|0)
(4^- 0 1 0|0) (4^+ 1 0 0|0) (4^- 1 0 0|0) (m_0 1 1|0) (m_0 1 - 1|0)
(m_1 0 1|0) (m_1 0 - 1|0) (m_1 1 0|0) (m_1 - 1 0|0)
]
```

Group 31.1.2.331 (Class 2

```
Group): {(1 | n)}
[
(1|0)      (2_0 0 1|0)      (2_0 1 0|0)      (2_1 0 0|0)      (3^+ 1 1 1|0)
(3^- 1 1 1|0) (3^+ 1 1 - 1|0) (3^- 1 1 - 1|0) (3^+ 1 - 1 1|0) (3^- 1 - 1 1|0)
(3^+ 1 - 1 - 1|0) (3^- 1 - 1 - 1|0) (4^- 0 0 1|0) (4^- 0 0 1|0) (4^+ 0 1 0|0)
(4^- 0 1 0|0) (4^+ 1 0 0|0) (4^- 1 0 0|0) (m_0 1 1|0) (m_0 1 - 1|0)
(m_1 0 1|0) (m_1 0 - 1|0) (m_1 1 0|0) (m_1 - 1 0|0) (1|0)'
(2_0 0 1|0)' (2_0 1 0|0)' (2_1 0 0|0)' (3^+ 1 1 1|0)' (3^- 1 1 1|0)'
(3^+ 1 1 - 1|0)' (3^- 1 1 - 1|0)' (3^+ 1 - 1 1|0)' (3^- 1 - 1 1|0)' (3^+ 1 - 1 - 1|0)'
(3^- 1 - 1 - 1|0)' (4^- 0 0 1|0)' (4^- 0 0 1|0)' (4^+ 0 1 0|0)' (4^- 0 1 0|0)'
(4^+ 1 0 0|0)' (4^- 1 0 0|0)' (m_0 1 1|0)' (m_0 1 - 1|0)' (m_1 0 1|0)'
(m_1 0 - 1|0)' (m_1 1 0|0)' (m_1 - 1 0|0)'
]
```

Group 31.1.3.332 (Class 3

```
Group): {(1 | n)}
[
(1|0)      (2_0 0 1|0)      (2_0 1 0|0)      (2_1 0 0|0)      (3^+ 1 1 1|0)
(3^- 1 1 1|0) (3^+ 1 1 - 1|0) (3^- 1 1 - 1|0) (3^+ 1 - 1 1|0) (3^- 1 - 1 1|0)
(3^+ 1 - 1 - 1|0) (3^- 1 - 1 - 1|0) (4^- 0 0 1|0) (4^- 0 0 1|0) (4^+ 0 1 0|0)
(4^- 0 1 0|0) (4^+ 1 0 0|0) (4^- 1 0 0|0) (m_0 1 1|0) (m_0 1 - 1|0)
(m_1 0 1|0) (m_1 0 - 1|0) (m_1 1 0|0) (m_1 - 1 0|0) (4^+ 0 0 1|0)'
(4^- 0 0 1|0)' (4^+ 0 1 0|0)' (4^- 0 1 0|0)' (4^+ 1 0 0|0)' (4^- 1 0 0|0)'
(2_0 1 1|0)' (2_0 1 - 1|0)' (2_1 0 1|0)' (2_1 0 - 1|0)' (2_1 1 0|0)'
(2_1 - 1 0|0)' (1|0)' (m_0 0 1|0)' (m_0 1 0|0)' (m_1 0 0|0)'
(3^+ 1 1 1|0)' (3^- 1 1 1|0)' (3^+ 1 1 - 1|0)' (3^- 1 1 - 1|0)' (3^+ 1 - 1 1|0)'
(3^- 1 - 1 1|0)' (3^+ 1 - 1 - 1|0)' (3^- 1 - 1 - 1|0)' (3^+ 1 1 1|0)' (3^- 1 1 1|0)'
]
```

Group 31.2.1.333 (Nonmagnetic spacetime group):

```
{(1 | n)}
[
(1|0)      (2_0 0 1|0)      (2_0 1 0|0)      (2_1 0 0|0)      (3^+ 1 1 1|0)
(3^- 1 1 1|0) (3^+ 1 1 - 1|0) (3^- 1 1 - 1|0) (3^+ 1 - 1 1|0) (3^- 1 - 1 1|0)
(3^+ 1 - 1 - 1|0) (3^- 1 - 1 - 1|0) (4^- 0 0 1|½) (4^- 0 0 1|½) (4^+ 0 1 0|½)
(4^- 0 1 0|½) (4^+ 1 0 0|½) (4^- 1 0 0|½) (m_0 1 1|½) (m_0 1 - 1|½)
(m_1 0 1|½) (m_1 0 - 1|½) (m_1 1 0|½) (m_1 - 1 0|½)
]
```

Group 31.2.2.334 (Class 2

```
Group): {(1 | n)}
[
(1|0)      (2_0 0 1|0)      (2_0 1 0|0)      (2_1 0 0|0)      (3^+ 1 1 1|0)
(3^- 1 1 1|0) (3^+ 1 1 - 1|0) (3^- 1 1 - 1|0) (3^+ 1 - 1 1|0) (3^- 1 - 1 1|0)
(3^+ 1 - 1 - 1|0) (3^- 1 - 1 - 1|0) (4^- 0 0 1|½) (4^- 0 0 1|½) (4^+ 0 1 0|½)
(4^- 0 1 0|½) (4^+ 1 0 0|½) (4^- 1 0 0|½) (m_0 1 1|½) (m_0 1 - 1|½)
(m_1 0 1|½) (m_1 0 - 1|½) (m_1 1 0|½) (m_1 - 1 0|½) (1|0)'
(2_0 0 1|0)' (2_0 1 0|0)' (2_1 0 0|0)' (3^+ 1 1 1|0)' (3^- 1 1 1|0)'
(3^+ 1 1 - 1|0)' (3^- 1 1 - 1|0)' (3^+ 1 - 1 1|0)' (3^- 1 - 1 1|0)' (3^+ 1 - 1 - 1|0)'
(3^- 1 - 1 - 1|0)' (4^- 0 0 1|½)' (4^- 0 0 1|½)' (4^+ 0 1 0|½)' (4^- 0 1 0|½)'
(4^+ 1 0 0|½)' (4^- 1 0 0|½)' (m_0 1 1|½)' (m_0 1 - 1|½)' (m_1 0 1|½)'
]
```

$(m_{1\ 0\ -1} \frac{1}{2})'$	$(m_{1\ 1\ 0} \frac{1}{2})'$	$(m_{1\ -1\ 0} \frac{1}{2})'$		
---------------------------------	--------------------------------	---------------------------------	--	--

]

Group 31.2.3.335 (Class 3
Group): $\{(1 | n)\}$

$(1 0)$	$(2_{0\ 0\ 1} 0)$	$(2_{0\ 1\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$
$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$	$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$
$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$	$(\bar{4}^{+0\ 0\ 1} \frac{1}{2})$	$(\bar{4}^{-0\ 0\ 1} \frac{1}{2})$	$(\bar{4}^{+0\ 1\ 0} \frac{1}{2})$
$(\bar{4}^{-0\ 1\ 0} \frac{1}{2})$	$(\bar{4}^{+1\ 0\ 0} \frac{1}{2})$	$(\bar{4}^{-1\ 0\ 0} \frac{1}{2})$	$(m_{0\ 1\ 1} \frac{1}{2})$	$(m_{0\ 1\ -1} \frac{1}{2})$
$(m_{1\ 0\ 1} \frac{1}{2})$	$(m_{1\ 0\ -1} \frac{1}{2})$	$(m_{1\ 1\ 0} \frac{1}{2})$	$(m_{1\ -1\ 0} \frac{1}{2})$	$(4^{+0\ 0\ 1} 0)'$
$(4^{-0\ 0\ 1} 0)'$	$(4^{+0\ 1\ 0} 0)'$	$(4^{-0\ 1\ 0} 0)'$	$(4^{+1\ 0\ 0} 0)'$	$(4^{-1\ 0\ 0} 0)'$
$(2_{0\ 1\ 1} 0)'$	$(2_{0\ 1\ -1} 0)'$	$(2_{1\ 0\ 1} 0)'$	$(2_{1\ 0\ -1} 0)'$	$(2_{1\ 1\ 0} 0)'$
$(2_{1\ -1\ 0} 0)'$	$(\bar{1} \frac{1}{2})'$	$(m_{0\ 0\ 1} \frac{1}{2})'$	$(m_{0\ 1\ 0} \frac{1}{2})'$	$(m_{1\ 0\ 0} \frac{1}{2})'$
$(\bar{3}^{+1\ 1\ 1} \frac{1}{2})'$	$(\bar{3}^{-1\ 1\ 1} \frac{1}{2})'$	$(\bar{3}^{+1\ 1\ -1} \frac{1}{2})'$	$(\bar{3}^{-1\ 1\ -1} \frac{1}{2})'$	$(\bar{3}^{+1\ -1\ 1} \frac{1}{2})'$
$(\bar{3}^{-1\ -1\ 1} \frac{1}{2})'$	$(\bar{3}^{+1\ -1\ -1} \frac{1}{2})'$	$(\bar{3}^{-1\ -1\ -1} \frac{1}{2})'$		

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

POINT GROUP 32 (m-3m)

%%%%%%%%%%%%%%
%%%%%%%%%%%%%

Group 32.1.1.336 (Nonmagnetic spacetime group):

$(1 0)$	$(4^{+0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} 0)$	$(4^{-0\ 0\ 1} 0)$	$(4^{+0\ 1\ 0} 0)$
$(2_{0\ 1\ 0} 0)$	$(4^{-0\ 1\ 0} 0)$	$(4^{+1\ 0\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(4^{-1\ 0\ 0} 0)$
$(2_{0\ 1\ 1} 0)$	$(2_{0\ 1\ -1} 0)$	$(2_{1\ 0\ 1} 0)$	$(2_{1\ 0\ -1} 0)$	$(2_{1\ 1\ 0} 0)$
$(2_{1\ -1\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$	$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$
$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$	$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$	$(\bar{1} 0)$
$(\bar{4}^{+0\ 0\ 1} 0)$	$(m_{0\ 0\ 1} 0)$	$(\bar{4}^{-0\ 0\ 1} 0)$	$(\bar{4}^{+0\ 1\ 0} 0)$	$(m_{0\ 1\ 0} 0)$
$(\bar{4}^{-0\ 1\ 0} 0)$	$(\bar{4}^{+1\ 0\ 0} 0)$	$(m_{1\ 0\ 0} 0)$	$(\bar{4}^{-1\ 0\ 0} 0)$	$(m_{0\ 1\ 1} 0)$
$(m_{0\ 1\ -1} 0)$	$(m_{1\ 0\ 1} 0)$	$(m_{1\ 0\ -1} 0)$	$(m_{1\ 1\ 0} 0)$	$(m_{1\ -1\ 0} 0)$
$(\bar{3}^{+1\ 1\ 1} 0)$	$(\bar{3}^{-1\ 1\ 1} 0)$	$(\bar{3}^{+1\ 1\ -1} 0)$	$(\bar{3}^{-1\ 1\ -1} 0)$	$(\bar{3}^{+1\ -1\ 1} 0)$
$(\bar{3}^{-1\ -1\ 1} 0)$	$(\bar{3}^{+1\ -1\ -1} 0)$	$(\bar{3}^{-1\ -1\ -1} 0)$		

]

Group 32.1.2.337 (Class 2

$(1 0)$	$(4^{+0\ 0\ 1} 0)$	$(2_{0\ 0\ 1} 0)$	$(4^{-0\ 0\ 1} 0)$	$(4^{+0\ 1\ 0} 0)$
$(2_{0\ 1\ 0} 0)$	$(4^{-0\ 1\ 0} 0)$	$(4^{+1\ 0\ 0} 0)$	$(2_{1\ 0\ 0} 0)$	$(4^{-1\ 0\ 0} 0)$
$(2_{0\ 1\ 1} 0)$	$(2_{0\ 1\ -1} 0)$	$(2_{1\ 0\ 1} 0)$	$(2_{1\ 0\ -1} 0)$	$(2_{1\ 1\ 0} 0)$
$(2_{1\ -1\ 0} 0)$	$(3^{+1\ 1\ 1} 0)$	$(3^{-1\ 1\ 1} 0)$	$(3^{+1\ 1\ -1} 0)$	$(3^{-1\ 1\ -1} 0)$
$(3^{+1\ -1\ 1} 0)$	$(3^{-1\ -1\ 1} 0)$	$(3^{+1\ -1\ -1} 0)$	$(3^{-1\ -1\ -1} 0)$	$(\bar{1} 0)$
$(\bar{4}^{+0\ 0\ 1} 0)$	$(m_{0\ 0\ 1} 0)$	$(\bar{4}^{-0\ 0\ 1} 0)$	$(\bar{4}^{+0\ 1\ 0} 0)$	$(m_{0\ 1\ 0} 0)$
$(\bar{4}^{-0\ 1\ 0} 0)$	$(\bar{4}^{+1\ 0\ 0} 0)$	$(m_{1\ 0\ 0} 0)$	$(\bar{4}^{-1\ 0\ 0} 0)$	$(m_{0\ 1\ 1} 0)$
$(m_{0\ 1\ -1} 0)$	$(m_{1\ 0\ 1} 0)$	$(m_{1\ 0\ -1} 0)$	$(m_{1\ 1\ 0} 0)$	$(m_{1\ -1\ 0} 0)$
$(\bar{3}^{+1\ 1\ 1} 0)$	$(\bar{3}^{-1\ 1\ 1} 0)$	$(\bar{3}^{+1\ 1\ -1} 0)$	$(\bar{3}^{-1\ 1\ -1} 0)$	$(\bar{3}^{+1\ -1\ 1} 0)$
$(\bar{3}^{-1\ -1\ 1} 0)$	$(\bar{3}^{+1\ -1\ -1} 0)$	$(\bar{3}^{-1\ -1\ -1} 0)$	$(1 0)'$	$(4^{+0\ 0\ 1} 0)'$
$(2_{0\ 0\ 1} 0)'$	$(4^{-0\ 0\ 1} 0)'$	$(4^{+0\ 1\ 0} 0)'$	$(2_{0\ 1\ 0} 0)'$	$(4^{-0\ 1\ 0} 0)'$

$(4^+_{+1} 0_0 0)$ '	$(2_{+1} 0_0 0)$ '	$(4^-_{-1} 0_0 0)$ '	$(2_{01} 1_1 0)$ '	$(2_{01} 1_{-1} 0)$ '
$(2_{+1} 0_1 0)$ '	$(2_{+1} 0_{-1} 0)$ '	$(2_{+1} 1_0 0)$ '	$(2_{1-1} 0_1 0)$ '	$(3^+_{+1} 1_{11} 0)$ '
$(3^-_{-1} 1_{11} 0)$ '	$(3^+_{+1} 1_{1-1} 0)$ '	$(3^-_{-1} 1_{1-1} 0)$ '	$(3^+_{+1} 1_{-11} 0)$ '	$(3^-_{-1} 1_{-11} 0)$ '
$(3^+_{+1} 1_{-1-1} 0)$ '	$(3^-_{-1} 1_{-1-1} 0)$ '	$(\bar{1} 0)$ '	$(\bar{4}^+_{+0} 0_1 0)$ '	$(m_{001} 0)$ '
$(\bar{4}^-_{-0} 0_1 0)$ '	$(\bar{4}^+_{+0} 1_0 0)$ '	$(m_{010} 0)$ '	$(\bar{4}^-_{-0} 1_0 0)$ '	$(\bar{4}^+_{+1} 0_0 0)$ '
$(m_{100} 0)$ '	$(\bar{4}^-_{-1} 0_0 0)$ '	$(m_{011} 0)$ '	$(m_{01-1} 0)$ '	$(m_{101} 0)$ '
$(m_{10-1} 0)$ '	$(m_{110} 0)$ '	$(m_{1-10} 0)$ '	$(\bar{3}^+_{+1} 1_{11} 0)$ '	$(\bar{3}^-_{-1} 1_{11} 0)$ '
$(\bar{3}^+_{+1} 1_{1-1} 0)$ '	$(\bar{3}^-_{-1} 1_{1-1} 0)$ '	$(\bar{3}^+_{+1} 1_{-11} 0)$ '	$(\bar{3}^-_{-1} 1_{-11} 0)$ '	$(\bar{3}^+_{+1} 1_{-1-1} 0)$ '
$(\bar{3}^-_{-1} 1_{-1-1} 0)$ '				

Group 32.2.1.338 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

$(1 0)$	$(4^+_{+0} 0_1 \frac{1}{2})$	$(2_{00} 1_0 0)$	$(4^-_{-0} 0_1 0 \frac{1}{2})$	$(4^+_{+0} 1_0 \frac{1}{2})$
$(2_{+1} 0_0 0)$	$(4^-_{-0} 1_0 \frac{1}{2})$	$(4^+_{+1} 0_0 \frac{1}{2})$	$(2_{+1} 0_0 0)$	$(4^-_{-1} 0_0 \frac{1}{2})$
$(2_{+1} 1_1 \frac{1}{2})$	$(2_{+1} 0_{-1} \frac{1}{2})$	$(2_{+1} 0_1 \frac{1}{2})$	$(2_{+1} 0_{-1} \frac{1}{2})$	$(2_{+1} 1_0 \frac{1}{2})$
$(2_{+1} -1_0 \frac{1}{2})$	$(3^+_{+1} 1_{11} 0)$	$(3^-_{-1} 1_{11} 0)$	$(3^+_{+1} 1_{1-1} 0)$	$(3^-_{-1} 1_{1-1} 0)$
$(3^+_{+1} 1_{-11} 0)$	$(3^-_{-1} 1_{-11} 0)$	$(3^+_{+1} 1_{-1-1} 0)$	$(3^-_{-1} 1_{-1-1} 0)$	$(\bar{1} 0)$
$(\bar{4}^+_{+0} 0_1 \frac{1}{2})$	$(m_{001} 0)$	$(\bar{4}^-_{-0} 0_1 \frac{1}{2})$	$(\bar{4}^+_{+0} 1_0 \frac{1}{2})$	$(m_{010} 0)$
$(\bar{4}^-_{-0} 1_0 \frac{1}{2})$	$(\bar{4}^+_{+1} 0_0 \frac{1}{2})$	$(m_{100} 0)$	$(\bar{4}^-_{-1} 0_0 \frac{1}{2})$	$(m_{011} \frac{1}{2})$
$(m_{01-1} \frac{1}{2})$	$(m_{101} \frac{1}{2})$	$(m_{10-1} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$
$(\bar{3}^+_{+1} 1_{11} 0)$	$(\bar{3}^-_{-1} 1_{11} 0)$	$(\bar{3}^+_{+1} 1_{1-1} 0)$	$(\bar{3}^-_{-1} 1_{1-1} 0)$	$(\bar{3}^+_{+1} 1_{-11} 0)$
$(\bar{3}^-_{-1} 1_{-11} 0)$	$(\bar{3}^+_{+1} 1_{-1-1} 0)$	$(\bar{3}^-_{-1} 1_{-1-1} 0)$		

Group 32.2.2.339 (Class 2

Group): $\{(1 \mid n)\}$

$(1 0)$	$(4^+_{+0} 0_1 \frac{1}{2})$	$(2_{00} 1_0 0)$	$(4^-_{-0} 0_1 0 \frac{1}{2})$	$(4^+_{+0} 1_0 \frac{1}{2})$
$(2_{+1} 0_0 0)$	$(4^-_{-0} 1_0 \frac{1}{2})$	$(4^+_{+1} 0_0 \frac{1}{2})$	$(2_{+1} 0_0 0)$	$(4^-_{-1} 0_0 \frac{1}{2})$
$(2_{+1} 1_1 \frac{1}{2})$	$(2_{+1} 0_{-1} \frac{1}{2})$	$(2_{+1} 0_1 \frac{1}{2})$	$(2_{+1} 0_{-1} \frac{1}{2})$	$(2_{+1} 1_0 \frac{1}{2})$
$(2_{+1} -1_0 \frac{1}{2})$	$(3^+_{+1} 1_{11} 0)$	$(3^-_{-1} 1_{11} 0)$	$(3^+_{+1} 1_{1-1} 0)$	$(3^-_{-1} 1_{1-1} 0)$
$(3^+_{+1} 1_{-11} 0)$	$(3^-_{-1} 1_{-11} 0)$	$(3^+_{+1} 1_{-1-1} 0)$	$(3^-_{-1} 1_{-1-1} 0)$	$(\bar{1} 0)$
$(\bar{4}^+_{+0} 0_1 \frac{1}{2})$	$(m_{001} 0)$	$(\bar{4}^-_{-0} 0_1 \frac{1}{2})$	$(\bar{4}^+_{+0} 1_0 \frac{1}{2})$	$(m_{010} 0)$
$(\bar{4}^-_{-0} 1_0 \frac{1}{2})$	$(\bar{4}^+_{+1} 0_0 \frac{1}{2})$	$(m_{100} 0)$	$(\bar{4}^-_{-1} 0_0 \frac{1}{2})$	$(m_{011} \frac{1}{2})$
$(m_{01-1} \frac{1}{2})$	$(m_{101} \frac{1}{2})$	$(m_{10-1} \frac{1}{2})$	$(m_{110} \frac{1}{2})$	$(m_{1-10} \frac{1}{2})$
$(\bar{3}^+_{+1} 1_{11} 0)$	$(\bar{3}^-_{-1} 1_{11} 0)$	$(\bar{3}^+_{+1} 1_{1-1} 0)$	$(\bar{3}^-_{-1} 1_{1-1} 0)$	$(\bar{3}^+_{+1} 1_{-11} 0)$
$(\bar{3}^-_{-1} 1_{-11} 0)$	$(\bar{3}^+_{+1} 1_{-1-1} 0)$	$(\bar{3}^-_{-1} 1_{-1-1} 0)$	$(1 0)'$	$(4^+_{+0} 0_1 \frac{1}{2})'$
$(2_{+1} 0_1 0)'$	$(4^-_{-0} 0_1 \frac{1}{2})'$	$(4^+_{+0} 1_0 \frac{1}{2})'$	$(2_{+1} 0_0 0)'$	$(4^-_{-0} 1_0 \frac{1}{2})'$
$(4^+_{+1} 0_0 \frac{1}{2})'$	$(2_{+1} 0_0 0)'$	$(4^-_{-1} 0_0 \frac{1}{2})'$	$(2_{+1} 1_1 \frac{1}{2})'$	$(2_{+1} -1_1 \frac{1}{2})'$
$(2_{+1} 0_1 \frac{1}{2})'$	$(2_{+1} 0_{-1} \frac{1}{2})'$	$(2_{+1} 0_1 \frac{1}{2})'$	$(2_{+1} -1_0 \frac{1}{2})'$	$(3^+_{+1} 1_{11} 0)'$
$(3^-_{-1} 1_{11} 0)'$	$(3^+_{+1} 1_{1-1} 0)'$	$(3^-_{-1} 1_{1-1} 0)'$	$(3^+_{+1} 1_{-11} 0)'$	$(3^-_{-1} 1_{-11} 0)'$
$(3^+_{+1} 1_{-1-1} 0)'$	$(3^-_{-1} 1_{-1-1} 0)'$	$(\bar{1} 0)'$	$(\bar{4}^+_{+0} 0_1 \frac{1}{2})'$	$(m_{001} 0)'$
$(\bar{4}^-_{-0} 0_1 \frac{1}{2})'$	$(\bar{4}^+_{+0} 1_0 \frac{1}{2})'$	$(m_{010} 0)'$	$(\bar{4}^-_{-1} 0_0 \frac{1}{2})'$	$(\bar{4}^+_{+1} 0_0 \frac{1}{2})'$
$(m_{100} 0)'$	$(\bar{4}^-_{-1} 0_0 \frac{1}{2})'$	$(m_{011} \frac{1}{2})'$	$(m_{01-1} \frac{1}{2})'$	$(m_{101} \frac{1}{2})'$
$(m_{10-1} \frac{1}{2})'$	$(m_{110} \frac{1}{2})'$	$(m_{1-10} \frac{1}{2})'$	$(\bar{3}^+_{+1} 1_{11} 0)'$	$(\bar{3}^-_{-1} 1_{11} 0)'$
$(\bar{3}^+_{+1} 1_{1-1} 0)'$	$(\bar{3}^-_{-1} 1_{1-1} 0)'$	$(\bar{3}^+_{+1} 1_{-11} 0)'$	$(\bar{3}^-_{-1} 1_{-11} 0)'$	$(\bar{3}^+_{+1} 1_{-1-1} 0)'$
$(\bar{3}^-_{-1} 1_{-1-1} 0)'$				

Group 32.3.1.340 (Nonmagnetic spacetime group):

$\{(1 \mid n)\}$

$(1 0)$	$(4^+_{+0} 0_1 0)$	$(2_{00} 1_0 0)$	$(4^-_{-0} 0_1 0 0)$	$(4^+_{+0} 1_0 0)$
$(2_{+1} 0_0 0)$	$(4^-_{-0} 1_0 0)$	$(4^+_{+1} 0_0 0)$	$(2_{+1} 0_0 0)$	$(4^-_{-1} 0_0 0)$
$(2_{+1} 1_1 0)$	$(2_{+1} 0_{-1} 0)$	$(2_{+1} 0_1 0)$	$(2_{+1} 0_{-1} 0)$	$(2_{+1} 1_0 0)$
$(2_{+1} -1_0 0)$	$(3^+_{+1} 1_{11} 0)$	$(3^-_{-1} 1_{11} 0)$	$(3^+_{+1} 1_{1-1} 0)$	$(3^-_{-1} 1_{1-1} 0)$
$(3^+_{+1} 1_{-11} 0)$	$(3^-_{-1} 1_{-11} 0)$	$(3^+_{+1} 1_{-1-1} 0)$	$(3^-_{-1} 1_{-1-1} 0)$	$(\bar{1} \frac{1}{2})$
$(\bar{4}^+_{+0} 0_1 \frac{1}{2})$	$(m_{001} \frac{1}{2})$	$(\bar{4}^-_{-0} 0_1 \frac{1}{2})$	$(\bar{4}^+_{+0} 1_0 \frac{1}{2})$	$(m_{010} \frac{1}{2})$
$(\bar{4}^-_{-0} 1_0 \frac{1}{2})$	$(\bar{4}^+_{+1} 0_0 \frac{1}{2})$	$(m_{100} \frac{1}{2})$	$(\bar{4}^-_{-1} 0_0 \frac{1}{2})$	$(m_{011} \frac{1}{2})$

$$\begin{array}{ccccc}
(\mathfrak{m}_{0\,1\,-1} \mid \frac{1}{2}) & (\mathfrak{m}_{1\,0\,1} \mid \frac{1}{2}) & (\mathfrak{m}_{1\,0\,-1} \mid \frac{1}{2}) & (\mathfrak{m}_{1\,1\,0} \mid \frac{1}{2}) & (\mathfrak{m}_{1\,-1\,0} \mid \frac{1}{2}) \\
(\overline{3}^+_{1\,1\,1} \mid \frac{1}{2}) & (\overline{3}^-_{-1\,1\,1} \mid \frac{1}{2}) & (\overline{3}^+_{1\,1\,-1} \mid \frac{1}{2}) & (\overline{3}^-_{1\,1\,-1} \mid \frac{1}{2}) & (\overline{3}^+_{1\,-1\,1} \mid \frac{1}{2}) \\
(\overline{3}^-_{-1\,-1\,1} \mid \frac{1}{2}) & (\overline{3}^+_{1\,-1\,-1} \mid \frac{1}{2}) & (\overline{3}^-_{1\,-1\,-1} \mid \frac{1}{2}) & & \\
] & & & &
\end{array}$$

Group 32.3.2.341 (Class 2)

Group): { (1 | n)}

$[$				
$(1 0)$	$(4^+ 0\ 0\ 1 0)$	$(2\ 0\ 0\ 1 0)$	$(4^- 0\ 0\ 1 0)$	$(4^+ 0\ 1\ 0 0)$
$(2\ 0\ 1\ 0 0)$	$(4^- 0\ 1\ 0 0)$	$(4^+ 1\ 0\ 0 0)$	$(2\ 1\ 0\ 0 0)$	$(4^- 1\ 0\ 0 0)$
$(2\ 0\ 1\ 1 0)$	$(2\ 0\ 1\ -1 0)$	$(2\ 1\ 0\ 1 0)$	$(2\ 1\ 0\ -1 0)$	$(2\ 1\ 1\ 0 0)$
$(2\ 1\ -1\ 0 0)$	$(3^+ 1\ 1\ 1 0)$	$(3\ -1\ 1\ 1 0)$	$(3^+ 1\ 1\ -1 0)$	$(3\ -1\ 1\ -1 0)$
$(3^+ 1\ -1\ 1 0)$	$(3\ -1\ -1\ 1 0)$	$(3^+ 1\ -1\ -1 0)$	$(3\ -1\ -1\ -1 0)$	$(\overline{1} \frac{1}{2})$
$(\overline{4}^+ 0\ 0\ 1 \frac{1}{2})$	$(m_0\ 0\ 1 \frac{1}{2})$	$(\overline{4}^- 0\ 0\ 1 \frac{1}{2})$	$(\overline{4}^+ 0\ 1\ 0 \frac{1}{2})$	$(m_0\ 1\ 0 \frac{1}{2})$
$(\overline{4}^- 0\ 1\ 0 \frac{1}{2})$	$(\overline{4}^+ 1\ 0\ 0 \frac{1}{2})$	$(m_1\ 0\ 0 \frac{1}{2})$	$(\overline{4}^- 1\ 0\ 0 \frac{1}{2})$	$(m_0\ 1\ 1 \frac{1}{2})$
$(m_0\ 1\ -1 \frac{1}{2})$	$(m_1\ 0\ 1 \frac{1}{2})$	$(m_1\ 0\ -1 \frac{1}{2})$	$(m_1\ 1\ 0 \frac{1}{2})$	$(m_1\ -1\ 0 \frac{1}{2})$
$(\overline{3}^+ 1\ 1\ 1 \frac{1}{2})$	$(\overline{3}\ -1\ 1\ 1 \frac{1}{2})$	$(\overline{3}^+ 1\ 1\ -1 \frac{1}{2})$	$(\overline{3}\ -1\ 1\ -1 \frac{1}{2})$	$(\overline{3}^+ 1\ -1\ 1 \frac{1}{2})$
$(\overline{3}^- 1\ -1\ 1 \frac{1}{2})$	$(\overline{3}^+ 1\ -1\ -1 \frac{1}{2})$	$(\overline{3}\ -1\ -1\ -1 \frac{1}{2})$	$(1 0)'$	$(4^+ 0\ 0\ 1 0)'$
$(2\ 0\ 0\ 1 0)'$	$(4\ -0\ 0\ 1 0)'$	$(4^+ 0\ 1\ 0 0)'$	$(2\ 0\ 1\ 0 0)'$	$(4\ -0\ 1\ 0 0)'$
$(4^+ 1\ 0\ 0 0)'$	$(2\ 1\ 0\ 0 0)'$	$(4^- 1\ 0\ 0 0)'$	$(2\ 0\ 1\ 1 0)'$	$(2\ 0\ 1\ -1 0)'$
$(2\ 1\ 0\ 1 0)'$	$(2\ 1\ 0\ -1 0)'$	$(2\ 1\ 1\ 0 0)'$	$(2\ 1\ -1\ 0 0)'$	$(3^+ 1\ 1\ 1 0)'$
$(3\ -1\ 1\ 1 0)'$	$(3^+ 1\ 1\ -1 0)'$	$(3\ -1\ 1\ -1 0)'$	$(3^+ 1\ -1\ 1 0)'$	$(3\ -1\ -1\ 1 0)'$
$(3^+ 1\ -1\ -1 0)'$	$(3\ -1\ -1\ -1 0)'$	$(\overline{1} \frac{1}{2})'$	$(\overline{4}^+ 0\ 0\ 1 \frac{1}{2})'$	$(m_0\ 0\ 1 \frac{1}{2})'$
$(\overline{4}^- 0\ 0\ 1 \frac{1}{2})'$	$(\overline{4}^+ 0\ 1\ 0 \frac{1}{2})'$	$(m_0\ 1\ 0 \frac{1}{2})'$	$(\overline{4}^- 0\ 1\ 0 \frac{1}{2})'$	$(\overline{4}^+ 1\ 0\ 0 \frac{1}{2})'$
$(m_1\ 0\ 0 \frac{1}{2})'$	$(\overline{4}^- 1\ 0\ 0 \frac{1}{2})'$	$(m_0\ 1\ 1 \frac{1}{2})'$	$(m_0\ 1\ -1 \frac{1}{2})'$	$(m_1\ 0\ 1 \frac{1}{2})'$
$(m_1\ 0\ -1 \frac{1}{2})'$	$(m_1\ 1\ 0 \frac{1}{2})'$	$(m_1\ -1\ 0 \frac{1}{2})'$	$(\overline{3}^+ 1\ 1\ 1 \frac{1}{2})'$	$(\overline{3}\ -1\ 1\ 1 \frac{1}{2})'$
$(\overline{3}^+ 1\ 1\ -1 \frac{1}{2})'$	$(\overline{3}\ -1\ 1\ -1 \frac{1}{2})'$	$(\overline{3}^+ 1\ -1\ 1 \frac{1}{2})'$	$(\overline{3}\ -1\ -1\ 1 \frac{1}{2})'$	$(\overline{3}^+ 1\ -1\ -1 \frac{1}{2})'$
$(\overline{3}\ -1\ -1\ -1 \frac{1}{2})'$				
$]$				

Group 32.4.1.342 (Nonmagnetic spacetime group):

$\{ (1 \mid n) \}$

$(1 0)$	$(4^+001 \tfrac{1}{2})$	$(2_001 0)$	$(4^-001 \tfrac{1}{2})$	$(4^+010 \tfrac{1}{2})$
$(2_010 0)$	$(4^-010 \tfrac{1}{2})$	$(4^+100 \tfrac{1}{2})$	$(2_100 0)$	$(4^-100 \tfrac{1}{2})$
$(2_011 \tfrac{1}{2})$	$(2_01-1 \tfrac{1}{2})$	$(2_101 \tfrac{1}{2})$	$(2_10-1 \tfrac{1}{2})$	$(2_110 \tfrac{1}{2})$
$(2_1-10 \tfrac{1}{2})$	$(3^+111 0)$	$(3_-111 0)$	$(3^+11-1 0)$	$(3_-11-1 0)$
$(3^+1-11 0)$	$(3_-1-11 0)$	$(3^+1-1-1 0)$	$(3_-1-1-1 0)$	$(\bar{1} \tfrac{1}{2})$
$(\bar{4}^+001 0)$	$(\mathbf{m}001 \tfrac{1}{2})$	$(\bar{4}^-001 0)$	$(\bar{4}^+010 0)$	$(\mathbf{m}010 \tfrac{1}{2})$
$(\bar{4}^-010 0)$	$(\bar{4}^+100 0)$	$(\mathbf{m}100 \tfrac{1}{2})$	$(\bar{4}^-100 0)$	$(\mathbf{m}011 0)$
$(\mathbf{m}01-1 0)$	$(\mathbf{m}101 0)$	$(\mathbf{m}10-1 0)$	$(\mathbf{m}110 0)$	$(\mathbf{m}1-10 0)$
$(\bar{3}^+111 \tfrac{1}{2})$	$(\bar{3}^-111 \tfrac{1}{2})$	$(\bar{3}^+11-1 \tfrac{1}{2})$	$(\bar{3}^-11-1 \tfrac{1}{2})$	$(\bar{3}^+1-11 \tfrac{1}{2})$
$(\bar{3}^-1-11 \tfrac{1}{2})$	$(\bar{3}^+1-1-1 \tfrac{1}{2})$	$(\bar{3}^-1-1-1 \tfrac{1}{2})$		

Group 32.4.2.343 (Class 2)

Group) : { (1 | n) }

$(1 0)$	$(4^+ 0\ 0\ 1 \frac{1}{2})$	$(2\ 0\ 0\ 1 0)$	$(4^- 0\ 0\ 1 \frac{1}{2})$	$(4^+ 0\ 1\ 0 \frac{1}{2})$
$(2\ 0\ 1\ 0 0)$	$(4^- 0\ 1\ 0 \frac{1}{2})$	$(4^+ 1\ 0\ 0 \frac{1}{2})$	$(2\ 1\ 0\ 0 0)$	$(4^- 1\ 0\ 0 \frac{1}{2})$
$(2\ 0\ 1\ 1 \frac{1}{2})$	$(2\ 0\ 1\ -1 \frac{1}{2})$	$(2\ 1\ 0\ 1 \frac{1}{2})$	$(2\ 1\ 0\ -1 \frac{1}{2})$	$(2\ 1\ 1\ 0 \frac{1}{2})$
$(2\ 1\ -1\ 0 \frac{1}{2})$	$(3^+ 1\ 1\ 1 0)$	$(3^- 1\ 1\ 1 0)$	$(3^+ 1\ 1\ -1 0)$	$(3^- 1\ 1\ -1 0)$
$(3^+ 1\ -1\ 1 0)$	$(3^- 1\ -1\ 1 0)$	$(3^+ 1\ -1\ -1 0)$	$(3^- 1\ -1\ -1 0)$	$(\bar{1} \frac{1}{2})$
$(\bar{4}^+ 0\ 0\ 1 0)$	$(m_0\ 0\ 1 \frac{1}{2})$	$(\bar{4}^- 0\ 0\ 1 0)$	$(\bar{4}^+ 0\ 1\ 0 0)$	$(m_0\ 1\ 0 \frac{1}{2})$
$(\bar{4}^- 0\ 1\ 0 0)$	$(\bar{4}^+ 1\ 0\ 0 0)$	$(m_1\ 0\ 0 \frac{1}{2})$	$(\bar{4}^- 1\ 0\ 0 0)$	$(m_0\ 1\ 1 0)$
$(m_0\ 1\ -1 0)$	$(m_1\ 0\ 1 0)$	$(m_1\ 0\ -1 0)$	$(m_1\ 1\ 0 0)$	$(m_1\ -1\ 0 0)$
$(\bar{3}^+ 1\ 1\ 1 \frac{1}{2})$	$(\bar{3}^- 1\ 1\ 1 \frac{1}{2})$	$(\bar{3}^+ 1\ 1\ -1 \frac{1}{2})$	$(\bar{3}^- 1\ 1\ -1 \frac{1}{2})$	$(\bar{3}^+ 1\ -1\ 1 \frac{1}{2})$
$(\bar{3}^- 1\ -1\ 1 \frac{1}{2})$	$(\bar{3}^+ 1\ -1\ -1 \frac{1}{2})$	$(\bar{3}^- 1\ -1\ -1 \frac{1}{2})$	$(1 0)'$	$(4^+ 0\ 0\ 1 \frac{1}{2})'$
$(2\ 0\ 0\ 1 0)'$	$(4^- 0\ 0\ 1 \frac{1}{2})'$	$(4^+ 0\ 1\ 0 \frac{1}{2})'$	$(2\ 0\ 1\ 0 0)'$	$(4^- 0\ 1\ 0 \frac{1}{2})'$
$(4^+ 1\ 0\ 0 \frac{1}{2})'$	$(2\ 1\ 0\ 0 0)'$	$(4^- 1\ 0\ 0 \frac{1}{2})'$	$(2\ 0\ 1\ 1 \frac{1}{2})'$	$(2\ 0\ 1\ -1 \frac{1}{2})'$
$(2\ 1\ 0\ 1 \frac{1}{2})'$	$(2\ 1\ 0\ -1 \frac{1}{2})'$	$(2\ 1\ 1\ 0 \frac{1}{2})'$	$(2\ 1\ -1\ 0 \frac{1}{2})'$	$(3^+ 1\ 1\ 1 0)'$
$(3^- 1\ 1\ 1 0)'$	$(3^+ 1\ 1\ -1 0)'$	$(3^- 1\ 1\ -1 0)'$	$(3^+ 1\ -1\ 1 0)'$	$(3^- 1\ -1\ 1 0)'$
$(3^+ 1\ -1\ -1 0)'$	$(3^- 1\ -1\ -1 0)'$	$(\bar{1} \frac{1}{2})'$	$(\bar{4}^+ 0\ 0\ 1 0)'$	$(m_0\ 0\ 1 \frac{1}{2})'$

$(\overline{4}^{-001} 0)'$	$(\overline{4}^{+010} 0)'$	$(m_010 \frac{1}{2})'$	$(\overline{4}^{-010} 0)'$	$(\overline{4}^{+100} 0)'$
$(m_{100} \frac{1}{2})'$	$(\overline{4}^{-100} 0)'$	$(m_011 0)'$	$(m_01-1 0)'$	$(m_{101} 0)'$
$(m_{10-1} 0)'$	$(m_{110} 0)'$	$(m_{1-10} 0)'$	$(\overline{3}^{+111} \frac{1}{2})'$	$(\overline{3}^{-111} \frac{1}{2})'$
$(\overline{3}^{+11-1} \frac{1}{2})'$	$(\overline{3}^{-11-1} \frac{1}{2})'$	$(\overline{3}^{+1-11} \frac{1}{2})'$	$(\overline{3}^{-1-11} \frac{1}{2})'$	$(\overline{3}^{+1-1-1} \frac{1}{2})'$
$(\overline{3}^{-1-1-1} \frac{1}{2})'$				

]

%%%%%%%%%%%%%%
%%%%%%%%%%%%%