PERFECT SET OF EULER TOURS OF $K_{p,p,p}$

T. GOVINDAN

Department of Mathematics
Government College of Engineering
Bargur-635104, Tamilnadu, India
e-mail: tggce@yahoo.com

AND

A. MUTHUSAMY

Department of Mathematics
Periyar University
Salem-636011, Tamilnadu, India
e-mail: ambdu@yahoo.com

Abstract

Bermond conjectured that if G is Hamilton cycle decomposable, then $L(G)$, the line graph of G , is Hamilton cycle decomposable. In this paper, we construct a perfect set of Euler tours for the complete tripartite graph $K_{p,p,p}$ for any prime p and hence prove Bermond's conjecture for $G = K_{p,p,p}$.

Keywords: compatible Euler tour, line graph, Hamilton cycle decomposition.

2010 Mathematics Subject Classification: 05C70.

REFERENCES

- [1] J.-C. Bermond, *Research Problems. Problem 97*, Discrete Math. **71** (1988) 275–276.
doi:10.1016/0012-365X(88)90107-0
- [2] J.A. Bondy and U.S.R. Murty, *Graph Theory with Applications* (MacMillan, New York, 1976).
- [3] T. Govindan and A. Muthusamy, *Nonexistence of a pair of arc disjoint directed Hamilton cycles on line digraphs of 2-diregular digraphs*, Discrete Math. Algorithms Appl. **07** (2015).
doi:10.1142/S1793830915500342

- [4] K. Heinrich and H. Verrall, *A construction of a perfect set of Euler tours of K_{2k+1}* , J. Combin. Des. **5** (1997) 215–230.
doi:10.1002/(SICI)1520-6610(1997)5:3<215::AID-JCD5>3.0.CO;2-I
- [5] A. Muthusamy and P. Paulraja, *Hamilton cycle decomposition of line graphs and a conjecture of Bermond*, J. Combin. Theory Ser. B **64** (1995) 1–16.
doi:10.1006/jctb.1995.1024
- [6] D.A. Pike, *Hamilton decompositions of some line graphs*, J. Graph Theory **20** (1995) 473–479.
doi:10.1002/jgt.3190200411
- [7] D.A. Pike, *Hamilton decompositions of line graphs of perfectly 1-factorisable graphs of even degree*, Australas. J. Combin. **12** (1995) 291–294.
- [8] S. Zhan, *Circuits and cycle decompositions* (Ph.D. Thesis, Simon Fraser University, 1992).
- [9] H. Verrall, *A construction of a perfect set of Euler tours of $K_{2k} + I$* , J. Combin. Des. **6** (1998) 183–211.
doi:10.1002/(SICI)1520-6610(1998)6:3<183::AID-JCD2>3.0.CO;2-B

Received 22 January 2015
 Revised 5 November 2015
 Accepted 5 November 2015