

The 40-m Thai National Radio Telescope and a future South-East Asian VLBI Network

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Along with an essential probe of radio wavelengths in the multi-messenger astronomy era, National Astronomical Research Institute of Thailand (NARIT) initiated a project in Thailand entitled Radio Astronomy Network and Geodesy for Development (RANGD) in 2016. In this project, a 40-m Thai National Radio Telescope (TNRT) is constructed in Chiang Mai as the largest radio telescope in South-East Asia. Its flexible operation with a wide-range of frequencies 0.3–115 GHz will promise us to uniquely contribute to the time-domain astronomy as well as carry out unbiased surveys for a wide variety of science topics: pulsars, fast radio bursts, gravitational waves, protostars and protostellar objects, active galactic nuclei, evolved stars, chemical peculiar stars, and so on [1]. Within the framework of collaborations with Very Long Baseline Interferometry (VLBI) arrays in the world, TNRT will drastically improve the imaging quality and performances based on its unique geographical location, for both radio astronomy and geodetic VLBI studies in South-East Asia for the first time.

In this talk, we will present the current status of TNRT that succeeded to detect the 1st light in March 2022 and will be scientifically launched in early-2023, with its potential key sciences. In addition, we will discuss our vision for developments of regional VLBI arrays, i.e., Thai National VLBI Array (TVA) and South-East Asian VLBI Network (SEAVN), established based on TNRT and other forthcoming radio telescopes in Thailand, Indonesia, Malaysia, together with Vietnam in scientifically collaboration.

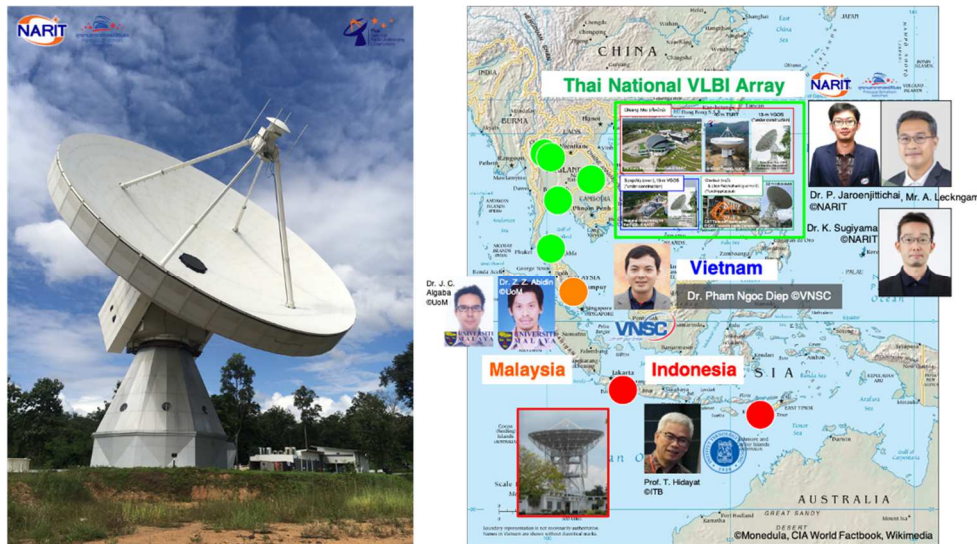


Figure 1. (Left) The 40-m TNRT (Credit: NARIT, TNRO, & RAOC). (Right) Preliminary concept of TVA and SEAVN (Credit of background map: Monedula, CIA World Factbook, Wikimedia).

References

- [1] Jaroenjittichai, P., Sugiyama, K., Kramer, B. H., Soonthornthum, B., et al., “Sciences with Thai National Radio Telescope”, 2022, arXiv:2210.04926

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