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Images of VLBI calibrators from the BeSSeL survey

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The BeSSeL Survey (Bar and Spiral Structure Legacy Survey) is a VLBA Key Science project. The primary goal of the survey is to study the spiral structure and kinematics of the Milky Way, by measuring distances and proper motions to masers in regions of massive star formation across large portions of the Milky Way. To measure the distances of masers via trigonometric parallaxes, the relative positions between the masers and extragalactic VLBI calibrators are determined with phase-referencing VLBI at different epochs spanning at least 1 year.

The Masers are usually served as phase reference since they are much stronger than the calibrators, allowing several hours' integration times for the weak calibrators. In addition, the calibrators are often observed though the whole observing program, providing excellent uv-coverage for imaging. From the BeSSeL survey, there will be about ˜5000 high quality images of ˜ 400 VLBI calibrators distributed near the Galactic plane. For each calibrator, there are at least 4 images obtained from different epochs spanning at least 1 year. In this talk, I will introduce the construction of the image database of these calibrators, and discuss the potential application on VLBI astrometry using this image database.

Primary author: Dr ZHANG, Bo (Shanghai Astronomical Observatory)

Presenter: Dr ZHANG, Bo (Shanghai Astronomical Observatory)

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