

V121a

ALMA 偏波観測機能の科学評価活動報告 (7) polarization calibrator

中西康一郎, Paulo Cortes, Ed Fomalont, Ruediger Kneissl, 亀野誠二, Anthony Remijan (JAO), 永井洋 (国立天文台), ALMA polarization commissioning team

Basic calibration of radio interferometer data is done by observing a compact and bright radio source, and a radio bright active galactic nucleus is employed as a calibrator for most situations. Not only finding good calibrators but also monitoring properties of them are crucial to achieve accurate calibration, because almost all of the calibrators flux densities are time variable. This situation is even serious in polarization observation. Interferometric polarization data calibration requires a calibrator which is bright in total flux density, and, at the same time, is highly polarized to do specific calibrations (e.g. instrumental polarization calibration). However, calibrator polarization characteristics have not been well known in millimeter and sub-millimeter.

The Atacama Large Millimeter/Submillimeter Array (ALMA) is the most powerful polarization imager ever built, and arranging a list of good polarization calibrators is one of the fundamental steps to realize sensitive polarization observation with ALMA. We, ALMA polarization commissioning team, have been working for polarization calibrator survey and characterization as a part of our commissioning activity. We searched for bright and highly polarized calibrators (fractional linear polarization $P > 2\%$), and found more than 20 polarization calibrator candidates to date. Monitoring observations of those calibrators have been carried out, and it turned out that more than half of the calibrator candidates were modestly stable in linear polarization ($|\Delta P/P| < 0.3$) over a few months.