V124a

ALMA：干渉計位相補正の現状と課題 (3)：長基線試験における位相補償観測（ALMA: fringe phase calibration (3) : phase referencing for the long baselines)

Yoshiharu Asaki (ISAS), Satoki Matsushita (ASIAA), Ed Fomalont, Catherine Vlahakis, Anthony Remijan, Stuarrt Corder (JAO)

In the ALMA long baseline campaign (LBC) in 2014, we have investigated a phase metrics for ALMA long baseline observations. The basic strategy of the ALMA phase correction shall be a hybrid technique using the WVR phase correction and phase referencing with the antenna fast switching. We have conducted a series of two continuum source observations using the hybrid technique in the LBC with the ALMA long baselines up to ~ 11 km.

In the research, we first investigated spatial structure functions (SSFs) of the raw and corrected interferometer phases. Power-law functions of the SSFs ranging from a few tens of meters to several hundred meters indicate that the troposphere above the site has three-dimensional turbulences for shorter baselines while two-dimensional turbulences can be observed for the long baselines with several kilometer lengths. We found that the hybrid technique using few degree separated phase calibrators is promising in order to improve the phase stability of ALMA especially for the baselines whose length is longer than a few km.