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## ALMA 偏波観測機能の科学評価活動報告 (3)

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Polarization observation is a unique and powerful tool to investigate astrophysical objects and processes which are intimately connected to magnetic field, such as active galactic nuclei, pre-stellar cores, and others. Atacama Large Millimeter/Submillimeter Array (ALMA) can receive two linear polarization (X, Y) simultaneously. By using four cross correlations (XX, YY, XY, YX), we can obtain four Stokes parameters and measure polarization of emission from the source. Polarization commissioning team is working on the system/science verification of polarization observation capability in order to offer it in near future.

We have been working on verification of instrumental polarization ('D-term'), whose property affect polarization sensitivity and development of the calibration plan. We mainly investigated the following aspects of D-term properties; 1) frequency dependence, 2) stability, and 3) changes in a field of view (f.o.v.).

Recent progress and results of polarization verification activities are as follows; i) mean D-term at on-axis (center of f.o.v.) across a baseband (2 GHz bandwidth) is less than a few % for bands 3, 6, and 7, ii) mean off-axis D-term may become larger with increasing positional offset from on-axis, iii) on-axis D-term likely to be calibrated at a level of 0.1% using a strongly polarized calibrator. These results show that continuum polarization imaging at well under the 1% level will be feasible at present for small angular size objects.