V134a Commissioning and Science Verification of the ACA Spectrometer

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The ACA Spectrometer (ACASPEC) is the newly developed spectrometer for the ALMA Total Power Array led by the KASI in collaboration with the NAOJ as a part of the EA ALMA Development Program. The ACASPEC is designed to provide auto-correlation power spectra for science targets and cross-correlation outputs for calibrations of the TP array. The hardware of the ACASPEC is composed of 4 GPU servers, and each GPU server has enough performance to process the 2 GHz bandwidth of one baseband pair from four TP antennas. It is expected the ACASPEC will bring: (1) Increasing the observing efficiency of the TP Array, (2) A better spectral dynamic range, and (3) Expandability for future updates. After installing the ACASPEC to the ALMA Array Operations Site in Chile in February 2022, we performed the commissioning and science verification (CSV) activity on the sky. Through the CSV, we successfully verified the fundamental capability of the ACASPEC connected with other ALMA subsystems, evaluated the performances (e.g., the linearity, the dynamic spectral range, and the stability), and conducted End-to-end testing including pipeline processing for science observations. In this talk, we present the CSV activity and the verified performances of the ACASPEC, as well as the latest status of the ACASPEC for offering to ALMA Science Operations in Cycle 10.