



## A THz superconducting imaging array developed for the DATE5 telescope

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Dome A, Antarctica, located at altitude of 4093 m, under lowest temperature of  $-83^{\circ}\text{C}$ , is an exceptionally dry site. Radiometric measurement on the atmospheric transparency at 0.66 THz reveals that the average PWV in summer at Dome A is about 0.14 mm. Further systematic measurement of the atmospheric transmission over 0.75-15 THz by a FIR/THz FTS strongly suggests that Dome A is a unique site for ground-based THz observations, especially for the 200-350 micron windows. Dome A Terahertz Telescope (DATE5) is therefore proposed for Chinese Antarctic Kunlun Observatory, suitable for the studies of the origin and evolution of local universe, the formation of stars and galaxies, and the ecology of interstellar medium.

We are currently developing a THz superconducting imaging array (TeSIA) for the DATE5. The TeSIA will be operating at the 350- $\mu\text{m}$  window, with a pixel number of  $32 \times 32$  and a sensitivity (NEP) of  $10\text{-}16 \text{ W/Hz}^{0.5}$ . Ti transition edge sensors (TES) with time-domain multiplexing and TiN microwave kinetic inductance detectors (MKIDs) with frequency-domain multiplexing are both developed for the TeSIA project. In this talk, we will present the detailed design of the system and the experimental results of the Ti TES and TiN MKIDs.