DART: DAOCHENG RADIO TELESCOPE SYSTEM AND EARLY RESULTS

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DAocheng Radio Telescope (DART) was renamed from the Daocheng Solar Radio Telescope (DSRT), a circular sparse array for interferometric imaging of the Sun. The DART is an instrument of the Meridian Project, China's major national science and technology infrastructure. The principal scientific driver of the DART is to monitor the highly dynamic solar activity in the corona, through which coronal mass ejections (CMEs) escape into interplanetary space. The DART was proposed in 2013 and approved in 2019. The telescope system of the array and the calibration tower was completed in November 2022. Since September 2023, the DART has been operational. DART system is a circular array of 1 km diameter with 313 element antennas, each with an aperture of 6 m. The nominal receiver band is 150–450 MHz, the frequency of solar radio emissions from the high corona. DART's circular array produces a dish-like u–v coverage of 50,000 quasi-uniform samples in a single polarization, full polarization visibility components of I, Q, U, and V are recorded in real-time. Based on its advantages of dense u-v coverage and a unique calibration system, the DART is not only a powerful radio camera for solar observation but also an extraordinary instrument for night astronomy, such as low-frequency spectral imaging surveys, pulsar and Fast Radio Bursts (FRBs) searching. The presentation will introduce the DART system, preliminary results for regular solar observation, and some dedicated observation campaigns in radio astronomy.