[초SKA-01] Largest Array SKA and Largest Dish FAST

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The largest array SKA (Square Kilometre Array) project was proposed by astronomers from 10 countries, and first coordinated by the LTWG (Large Telescope Working Group) formed at the General Assembly of URSI (International Union of Radio Science) in 1993. It enters the pre-construction phase (2012-2015), towards the 10% SKA construction (2016-2019) called SKA1 and the rest of SKA (2019-2023) called SKA 2, under the leadership of the SKA Organisation (SKAO) established on November 23, 2011. I will review the Chinese participation in the SKA project at national, regional and global levels in the past two decades. During such a Long March to the SKA, a number of national Megascience projects have taken root and have been (are being) successfully constructed, with costs at the 100 M US dollar level, including the largest dish FAST (Five-hundred meter Aperture Spherical Telescope), which can be seen as a forerunner of the KARST (Kilometre Area Radio Synthesis Telescope) project, being as one of the two LDSN (Large Diameter Small Number) concepts for realizing the SKA. A close look at the FAST project gives an impressive snapshot of the construction phase in China.

[초SKA-02] Theory of Cosmic Reionization in the New Era of Precision Cosmology

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As the accuracy in the measurement of cosmological parameters is ever-increasing in this era of precision cosmology, astrophysical constraints on high-redshift universe is also getting tighter. Three dimensional (3D) tomography of the high-redshift ($z>\sim7$) universe is expected to be made through the next-generation radio telescopes including various SKA pathfinders and SKA itself, which calls for extensive theoretical predictions. We present our new simulations of cosmic reionization covering the full dynamic range of radiation sources, and also the mock data for the (1) large-scale CMB polarization anisotropy for Planck mission, (2) small-scale, kinetic Sunyaev-Zel'dovich effect for South Pole Telescope project, and (3) 21-cm observations. We show that the new constraints on CMB from Planck will constrain the models of reionization significantly, which then should be tested by 3D tomography of high-redshift universe through the 21-cm observations by future radio telescopes.