

The Sunyaev-Zel'dovich Array  
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The Sunyaev-Zel'dovich Array (SZA) is an interferometric array consisting of eight 3.5 meter precision ( $30 \mu\text{m}$  rms surface) telescopes equipped with low-noise HEMT amplifier based receivers operating at 26 - 36 GHz and 85 - 115 GHz. A digital correlator will process up to 8 GHz bandwidth for exceptional continuum sensitivity. The project is being led by the University of Chicago with collaboration with Caltech, NASA/MSFC, Columbia and CARMA. The initial key project of the SZA is a deep survey covering 12 square degrees for galaxy clusters through their Sunyaev-Zel'dovich Effect (SZE). The SZE has the remarkable property that it is essentially redshift independent. Therefore the SZA will find all clusters above the survey mass-limit, independent of redshift. As the abundance of clusters with redshift is strongly dependent on the cosmology, the survey yields will be used to set tight constraints on cosmological parameters. The survey will be done using the 26-36 GHz band. The 85 - 115 GHz band will be used to perform detailed follow up observations of the survey detected clusters. These observations will allow an understanding cluster structure evolution and its effect on using high-redshift clusters for cosmological studies.

The SZA will also be used as a compact sub-array of CARMA creating a unique and powerful heterogeneous array, and thereby greatly increasing its angular dynamic range.

The SZA is currently under construction with first light expected by 2003 January. This presentation will review the scientific motivation for the SZA and the details of the design as well as the status of the project.