Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Probing the Epoch Reionization at Redshifts 6 to 12 with MWA, PAPER and HERA DANIEL JACOBS, Arizona State University, HERA COLLABORATION — Direct observation of cosmological hydrogen throughout cosmic time is possible via the 21cm line and is now being pursued as a new cosmological and astrophysical probe. Multiple experimental low frequency radio arrays have worked towards detection and characterization of this spectral line signal through many different epochs of cosmic time. The Epoch of Reionization (EoR), when the first stars ionized the primordial hydrogen half a billion years after the big bang, thought to occur between redshifts 6 and 12 is a period of intense interest. The Precision Array for Probing the Epoch of Reionization (PAPER) has placed a series of ever more sensitive limits on the 21cm power spectrum while the Murchison Widefield Array (MWA) has pioneered imaging of structure in the presence of foregrounds. Here we present the latest results from these experiments and introduce the next generation Hydrogen Epoch of Reionization Array (HERA) which will yield 20 times the sensitivity of first generation arrays and provide new constraints on the nature of the first stars, the evolution of primordial galaxies, and significant new constraints on fundamental cosmological parameters.

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Date submitted: 07 Jan 2016 Electronic form version 1.4