

The BINGO telescope: a new instrument exploring the new 21 cm cosmology window

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BINGO is a unique radio telescope designed to make the first detection of Baryon Acoustic Oscillations (BAO) at radio frequencies. This will be achieved by measuring the distribution of neutral hydrogen gas at cosmological distances using a technique called Intensity Mapping. Along with CMB anisotropies, the scale of BAO is one of the most powerful probes of cosmological parameters, including dark energy. The telescope will be built in a very low RFI site in Paraíba, Brazil, and will operate in the frequency range from 0.96 GHz to 1.26 GHz. The telescope design consists of two 40-m compact mirrors with no moving parts, yielding the excellent polarization performance and very low sidelobe levels required for intensity mapping. With a feedhorn array of 50 receivers, it will map a 15 declination strip as the sky drifts past the field-of-view of the telescope. The BINGO consortium is composed by USP, INPE, UF Campina Grande, Univ. Manchester and University College London (England), ETH Zurich (Switzerland), Univ. de La Republica (Uruguay). The experience and science goals achieved by the BINGO team will be advantageous as a pathfinder mission for the Square Kilometre Array (SKA) project.