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Abstract for an Invited Paper
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Overview of the Canadian Hydrogen Intensity-Mapping Experiment, CHIME

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Baryon Acoustic Oscillations (BAO) which occurred in the early universe have left a distinctive imprint in subsequent large-scale structure, providing a standard, cosmological ruler. Measurements of the apparent diameter of BAO over cosmic time reveal the expansion history of the Universe and thus provide valuable data for constraining models of dark energy. Intensity mapping of the hydrogen 21 cm line over a broad range in frequencies is an exciting new technique for determining the large scale, three-dimensional structure of the Universe. CHIME is a transit radio interferometer in the interior of British Columbia specifically designed to map cosmic structure over a redshift range of $0.8 < z < 2.5$. An initial $40 \times 37 m^2$ instrument with 128 dual-polarization feeds has seen first light, and construction of the full-sized, $100 \times 100 m^2$ instrument is funded. CHIME is projected to provide a measurement of the dark energy equation of state that will be competitive with Stage IV Dark Energy Task Force experiments but at a tiny fraction of the cost and starting now. I will give an overview of CHIME, its science goals as well as the challenges, key among which is the task of separating the galactic foregrounds from the cosmic 21 cm signal

¹For the CHIME collaboration