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Abstract for an Invited Paper for the NWS05 Meeting of the American Physical Society

ZEN and the search for high-redshift galaxies JON WILLIS, University of Victoria

The study of the most distant objects in the universe places unique constraints upon the nature of the early cosmos. Over the past 80 years the known universe has expanded dramatically with advances in telescope and detector technology, and has been accompanied by a growing insight into the formation of the first galaxies and quasars. Current observations of the most distant galaxies and quasars extend to when the universe was only 13% of its current size (a redshift z = 6.6 - equivalent to a look-back time of 12.6 Billion years) and place unique constraints upon the formation and distribution of the first stars together with the physical state of the high-redshift inter-galactic medium. In addition to providing an overview of the field, I will present the initial results of an ambitious observational programme which aims to extend studies of distant galaxies to a redshift z = 9 (Z Equals Nine - ZEN). The programme employs some of the deepest astronomical images currently in existence and places important constraints upon high-redshift star-formation and the role of neutral gas in the early universe.