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## **B-mode forecast of CMB-Bharat**

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The measurement of the primordial B-mode polarization in the cosmic microwave background (CMB) is a major challenge of future CMB experiments. However, as B-mode polarization is dominated by foregrounds at all scales and frequencies, the detectability of this cosmological signal solely depends on our ability to remove foregrounds. We present the of B-mode polarization forecast in the presence of galactic and extragalactic foregrounds and delensing in the context of the proposed CMB space mission, Exploring Cosmic History and Origins (ECHO) popularly known as 'CMB-Bharat'. We focus on, for the baseline design of ECHO, how polarised foreground can be controlled in recombination and reionization scales for more and more complex foreground models using both parametric (COMMANDER) and blind component separation approaches (NILC). In particular, we demonstrate, the impact of thermal dust, synchrotron, spinning dust, polarized extragalactic radio sources and delensing on tensor-to-scalar ratio r. In the presence of gravitational lensing and galactic diffuse emissions and point sources, the sensitivity is  $\sigma(r = 0) \sim 10^{-3}$ . We find ECHO would detect the  $r = 10^{-3}$  with  $4\sigma$  accuracy after foreground cleaning in the presence of diffuse missions only. We demonstrate the detectability with 84 % delensing as well. Furthermore, we also demonstrate the significance level of reionization optical depth  $\tau = 0.054$  in recombination scale from E-mode polarization.

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