

A 21-cm Cosmology Experiment on the Far Side of the Moon. B. Page^{1, 2}, S. D. Bale^{1, 2}, and A. Slosar³, ¹Space Sciences Laboratory, University of California, Berkeley, ²Physics Department, University of California, Berkeley ³Physics Department, Brookhaven National Laboratory, Upton, NY

The Lunar Surface Electromagnetics Experiment (LuSEE) will measure the radio-frequency sky between 50 kHz and 50 MHz from the Schrödinger basin. Of particular interest in this frequency band is redshifted 21-cm emission from the cosmic dark ages, which cannot be easily probed from Earth due to reflection from the ionosphere and interference from artificial sources. LuSEE will place constraints on the amplitude of the predicted trough in cosmic H I brightness at $z \sim 100$. Detection of this 50 mK signal amid the 10^4 K galactic foreground will require exquisite systematics control and elaborate data processing. In anticipation of these challenges, we generated synthetic LuSEE data and evaluated the ability of foreground mitigation techniques to extract the cosmological signal.