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SPIDER: Exploring the Dawn of Time from Above the Clouds

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Summary

SPIDER is an ambitious balloon-borne instrument to map the polarization of the cosmic microwave background at large angular scales. SPIDER targets the B-mode signature of primordial gravitational waves, with a focus on mapping a large sky area with high fidelity at multiple frequencies. SPIDER's six monochromatic refracting telescopes feed a total of more than 2000 antenna-coupled superconducting transition-edge sensors. A sapphire half-wave plate at the
aperture of each telescope modulates sky polarization for control of systematics. I will report on SPIDER's first long-duration balloon flight in January 2015, which fielded three receivers each at 95 GHz and 150 GHz. I will give an update on the status of data analysis and development
toward a second flight, which will add coverage at 285 GHz.

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