

First on-sky results, performance and future of the HiCIBaS - LOWFS

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ABSTRACT

The High-Contrast Imaging Balloon System Low-Order WaveFront Sensor (HiCIBaS - LOWFS) is a spatially modulated pyramid wavefront sensor to be used on the HiCIBaS project, a high-contrast imaging balloon borne telescope. The LOWFS will act as a fine pointing and atmospheric turbulence sensor. As the project will be using a relatively small telescope (14" dia.) due to budget constraints, creative solutions must be developed to meet the requirements of such systems. Most optical design solutions are not well suited for HiCIBaS since the high-contrast coronagraph and the LOWFS will run as separate instruments. We present here a novel solution using existing pyramid wavefront sensor technology modified using non-common path aberration as a way to increase linearity and avoid pyramid manufacturing error. Performance in lab settings and on-sky results will be presented, and the future integration as an HiCIBaS subsystem will also be discussed.

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