

Abstract Submitted
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DESI System Throughput from Fiber Dither Analysis¹ EDWARD SCHLAFLY, Lawrence Livermore Natl Lab, DESI COLLABORATION — The success of the Dark Energy Spectroscopic Instrument (DESI) depends on its ability to collect photons from distant sources in its spectrographs. The efficiency of photon collection has many contributions: the telescope collecting area, the throughput of the fibers, optical system, and camera, the positioning of the fibers on target, the point spread function in the focal plane, and the accuracy of fiber positioning. Fiber dithering allows the contributions to the total system throughput from fiber positioning accuracy and the point spread function to be separated from other sources of light loss. We show that DESI positions fibers with an accuracy of 11 microns (0.16 arcseconds) and delivers a total throughput within 80% of expectations, with improvements possible as DESI completes commissioning. This performance will enable DESI to meet its goal of measuring redshifts for >30 million galaxies to measure the history of the expansion of the universe and the growth of structure.

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