

Astronomical Spectroscopy with Skipper CCDs: First Results from a Skipper CCD Focal Plane Prototype at SIFS

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Ultra-low readout noise detectors will enable increased sensitivity to high-density and high-redshift spectroscopic surveys to place tighter constraints on dark energy and dark matter (e.g., a Stage-5 Spectroscopic Survey). We present the first on-sky results from an ultra-low-readout-noise Skipper charge-coupled device (CCD) focal plane prototype for the SOAR Integral Field Spectrograph (SIFS). We present charge-quantized, photon-counting observations from a quasar at redshift $z \sim 3.5$ (HB89 1159+123) and show the detector sensitivity increase for faint spectral features. We demonstrate signal-to-noise performance improvements for SIFS observations in the low-background, readout-noise-dominated regime.

Primary authors: DRLICA-WAGNER, Alex (Fermilab); MARRUFO VILLALPANDO, Edgar (The University of Chicago); ROACH, Brandon (Kavli Institute for Cosmological Physics)

Presenter: MARRUFO VILLALPANDO, Edgar (The University of Chicago)

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