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Abstract: Co-authors:

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Abstract:

SOFIA, the Stratospheric Observatory for Infrared Astronomy, provides low-water vapor observations from optical to far-IR wavelengths with a suite of 7 astronomical instruments. A co-mounted configuration (known as FLIPO) of two instruments, HIPO and FLITECAM, will be particularly useful in exoplanet transit investigations. HIPO is a dual-CCD high-speed optical camera, and FLITECAM is a large FOV 1-5 micron imager and spectrometer.

The FLIPO configuration allows simultaneous high-speed imaging of a 6 arc minute field in three channels, two in the optical and one in the near-IR region. In the future IR spectroscopic observations may also be feasible. FLIPO filters may be optimized for a given observation based on spectral features in the exoplanet's spectrum and to capitalize on the low water vapor and relatively low background characteristic of stratospheric observations.

We have gained some flight experience with HIPO and FLIPO during the early science period in late 2011 and during a HIPO commissioning test in early 2013, but our first attempt at observing a real transit will occur during Cycle 1 observations scheduled in September and October 2013. We will discuss the confounding factors (to use Kepler terminology) known to date, the means we have available either to control or compensate for them, and our preliminary photometric performance. While the SOFIA observing conditions and instrumentation differ fundamentally from Kepler's, the general approach of control and correction used so successfully with Kepler applies to SOFIA as well.

We also explore the planning and selection of exoplanet targets for SOFIA observations and potential future synergies with TESS and ground-based surveys.