FLITECAM, a 1-5 micron camera and spectrometer for SOFIA


Eric E. Becklin and Ralph Y. Shuping (USRA/SOFIA NASA Ames Research Center)

SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a 2.7 m telescope mounted in a Boeing 747 SP.

ABSTRACT

FLITECAM is a 1-5 micron infrared camera for NASA’s Stratospheric Observatory for Infrared Astronomy (SOFIA). A 1024 x 1024 InSb ALADDIN III detector and large refractive optics provide a field of view of almost 8 arc minutes in diameter with a scale of just under 0.5 arc seconds per pixel. The instrument is cooled by a double liquid helium and liquid nitrogen cryostat. Using a collimated beam of about 26 mm diameter, a low resolution spectroscopic mode is also available using direct-ruled KR55 grisms and fixed slits of either 1″ or 2″ width and 60″ length to yield resolving powers of R~1700 and 900 respectively. FLITECAM has been partially commissioned at the 3-m Shane telescope of Lick Observatory where the f/17 optics of this telescope provides almost the same plate scale as SOFIA. Astronomical observing requests (scripts) and a real-time data reduction pipeline (DRP) for dithered image patterns have been demonstrated. The performance of the instrument during ground-based trials is illustrated.

RESULTS

Illustrations from observing runs at Lick Observatory. In the center is a picture of the Orion Nebula reduced by the FLITECAM Data Reduction Pipeline and then combined into a 3-color composite. The image of the Orion Bar in the bottom left panel was obtained using a narrow band filter centered on the 3.3 μm PAH feature and a 512 x 512 sub-array was used to improve readout time. Apart from the JHK color composite, the results are as-seen at the telescope.

FLITECAM can be mounted directly to SOFIA or co-mounted with HIPO the occultation camera (left).

Illustrations from observing runs at Lick Observatory. The assembled collimator.

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