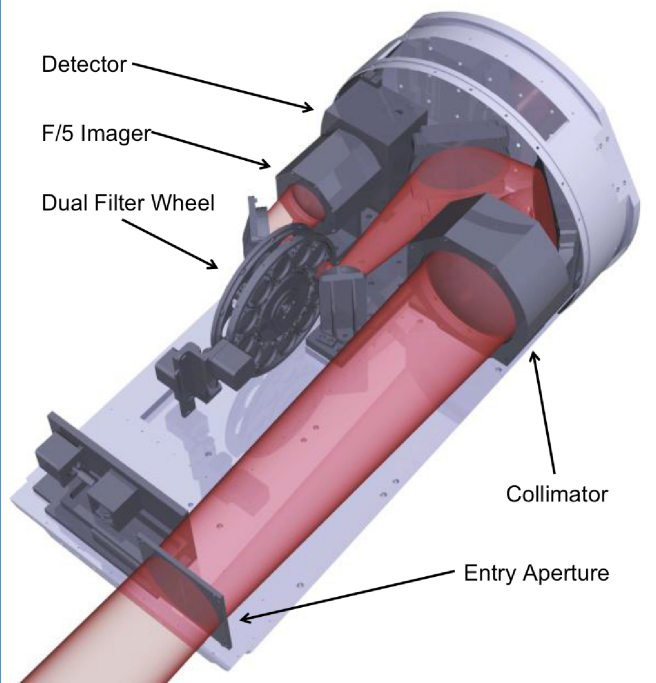


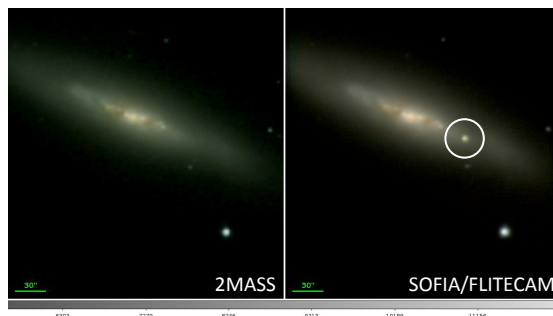
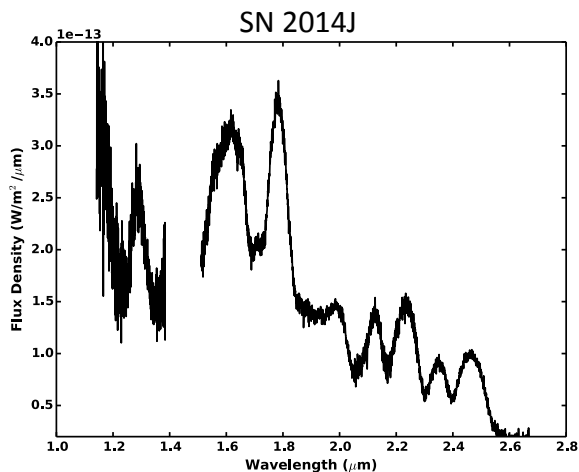
First Light Infrared Test Experiment CAMERA

FLITECAM

FLITECAM is a facility-class, near-infrared camera and spectrograph for SOFIA. It is designed to test the SOFIA telescope assembly imaging and infrared background quality. FLITECAM provides seeing-limited imaging from 1 - 3 μm and diffraction-limited imaging from 3 - 5.5 μm to cover science applications motivated by good atmospheric transmission and low thermal background. FLITECAM also provides moderate resolution spectroscopy from 1 to 5.5 μm . FLITECAM can be co-mounted with the Special Class Instrument HIPO (High-speed Imaging Photometer for Occultations) to provide simultaneous data acquisition at optical and near-IR wavelengths.



Block diagram of the front end of the FLITECAM instrument.



Top: Near-infrared spectrum of SN 2014J obtained on 27 February, 2014. The spectrum is composed of separate segments obtained via multiple settings of the FLITECAM grisms, exhibiting emission and absorption features from heavy elements produced in the supernova explosion. *Bottom:* 2MASS image (left) and SOFIA/FLITECAM image (right) of the central portion of galaxy M82 at near-infrared wavelengths. Supernova 2014J is marked by the white circle (north is at the top, east is to the left in these images).



FLITECAM Specifications

Principal Investigator: Dr. Ian McLean, Department of Physics and Astronomy, University of California

SOFIA Instrument pages - <http://www.sofia.usra.edu/Science/instruments>

FLITECAM Team page - <http://irlab.astro.ucla.edu/flitecam/index.html>

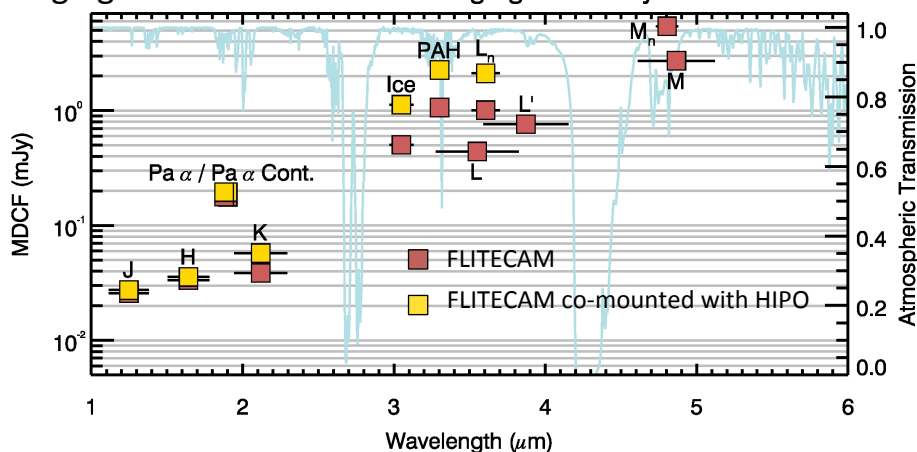
FLITECAM consists of a cryogenically cooled near-IR camera operating in the 1.0 - 5.5 μm waveband. It consists of a 1024x1024 InSb detector with 0.475"x0.475" pixels and uses refractive optics to provide a ~8' diameter field of view. The instrument has a set of broadband filters for imaging, as well as gratings for moderate resolution spectroscopy.

FLITECAM Filters		
Passband	λ_{eff} (μm)	5 % BW ^a (μm)
Standard Filters		
J	1.24	0.29
H	1.63	0.31
K	2.10	0.40
L	3.53	0.65
L'	3.86	0.70
M	4.84	0.65
Specialty Filters		
Pa α	1.87	0.03
Pa α Cont.	1.90	0.03
H ₂ O Ice	3.05	0.19
PAH	3.30	0.12
L _{narrow}	3.61	0.23
M _{narrow}	4.80	0.19
Order Sorting Filters		
H _{wide}	1.79	0.59
K _{wide}	2.30	0.88
K _{long}	2.45	0.55
L+M	4.11	2.72

^aBandwidth for transmission level is >5%.

Imaging

FLITECAM Imaging Sensitivity

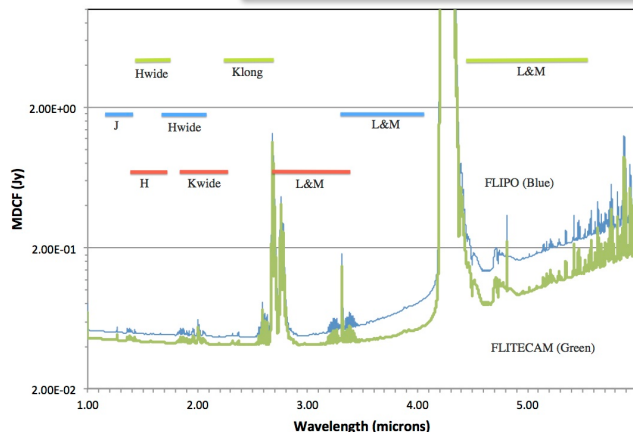


Theoretical continuum point source sensitivities for a S/N of 4 in 900 s at PWV overburdens of 7 μm . Horizontal bars correspond to the photometric band pass.

Grism Characteristics

Order	OSF	Coverage (μm)	R ($\lambda/\Delta\lambda$)	
			High-res	Low-res
Grism A, 162.75 Groove Sep. (l/mm)				
1	L+M	4.40 – 5.53	N/A	N/A
2	K _{long}	2.27 – 2.72	1690	1140
3	H _{wide}	1.55 – 1.83	1710	1290
Grism B, 217 Groove Sep. (l/mm)				
1	L+M	3.30 – 4.07	1780	1200
2	H _{wide}	1.68 – 2.05	1750	1320
3	J	1.14 – 1.39	1720	1425
Grism C, 130.2 Groove Sep. (l/mm)				
2	L+M	2.78 – 3.40	1670	1300
3	K _{wide}	1.91 – 2.28	1650	1390
4	H	1.50 – 1.72	1640	1400

Spectroscopy



FLITECAM (green) and FLIPO (blue) grism continuum point source sensitivities across FLITECAM bandpasses.