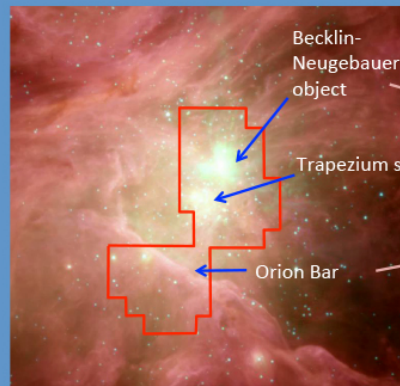


Field Imaging Far-Infrared Line Spectrometer



FIFI-LS is an integral field, far infrared spectrometer. It consists of two grating spectrometers that share the same field of view. The short wavelength camera operates between 51 μm and 120 μm , and the long wavelength camera covers 115 μm to 203 μm . FIFI-LS will play a major role in investigations of star formation and the properties of the interstellar medium in both our own galaxy and external galaxies. The key transitions that FIFI-LS will observe include the bright far-IR fine structure lines of oxygen, nitrogen, and carbon.

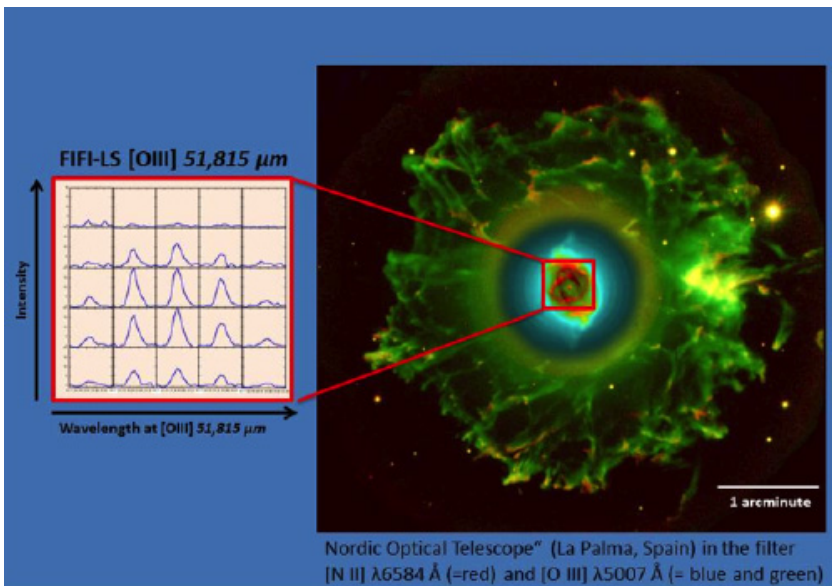
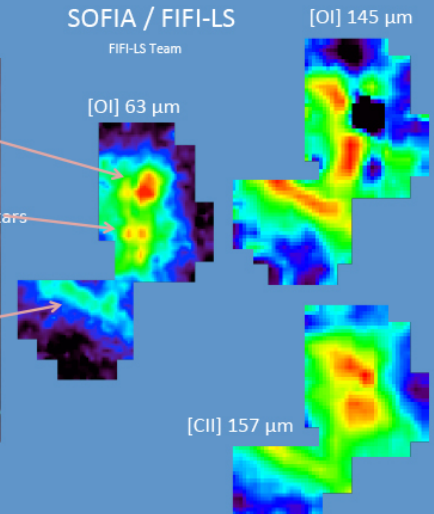
Orion Nebula



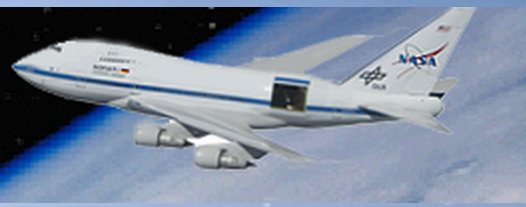
NASA/Spitzer/Harvard-Smithsonian CfA, Thomas Megeath

SOFIA / FIFI-LS

FIFI-LS Team



Top: The Orion Nebula mapped with FIFI-LS in three spectral lines at 63, 145, and 157 μm . A red outline indicating the position of the FIFI-LS observation is overlaid on a Spitzer image of the region. *Left:* FIFI-LS spectral map of planetary nebula NGC 6543 at 51 μm . Each pixel corresponds to 0.1 light years at the distance of NGC 6543. The FIFI-LS field of view is shown superimposed on a Nordic Optical Telescope image in filters [N II] and [O III]. (FIFI-LS Team, R.L.M. Corradi, Isaac Newton Group, and D. Goncalves, Instituto de Astrofísica de Canarias.)



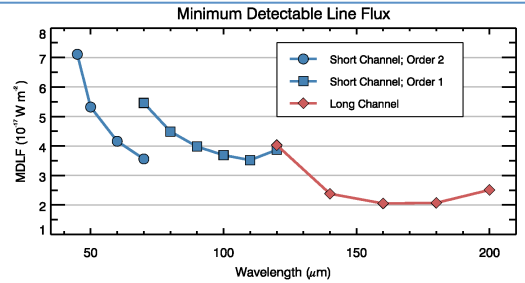
FIFI-LS Specifications

Principal Investigator: Alfred Krabbe, Universität Stuttgart - Institut für Raumfahrtssysteme

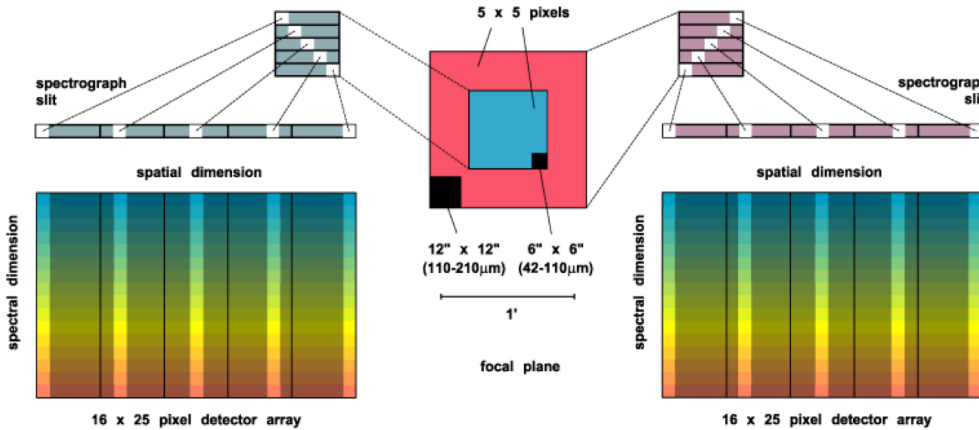
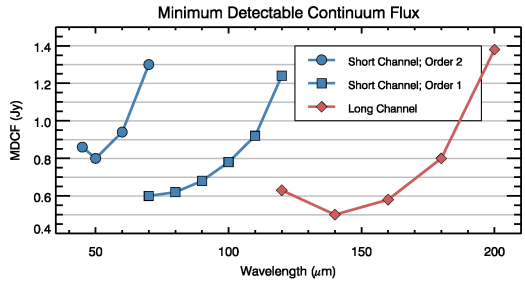
SOFIA Instrument pages - <http://www.sofia.usra.edu/Science/instruments>

FIFI-LS Team page – <http://www.irs.uni-stuttgart.de/forschung/FIFI-LS/index.html>

FIFI-LS is an integral field, far infrared spectrometer consisting of two independent grating spectrometers. Each spectrometer has a detector consisting of 400 pixels of Gallium-doped Germanium photoconductors. The projection onto the sky of the 5 x 5-pixel FOVs of the blue channel (51 - 120 μm) and the red channel (115 - 203 μm) is nearly concentric (10" offset), but the angular coverage differs. The red channel has a pixel size of 12" x 12" yielding a square 1' FOV, and the blue channel has a pixel size of 6" x 6", which yields a square 30" FOV. The resolving power of both channels varies between 500 and 2000 dependent on the observed wavelength. The higher values are reached towards the long wavelength ends of each spectrometer.



Sensitivity values calculated for a SNR of 4 in 900 s.



The integral field unit for each channel consists of 15 specialized mirrors to slice the two dimensional 5x5 pixel FOV into 5 slices (of 5 pixels length each) which are then reorganized along a one dimensional line (25x1 pixel), forming the spectrometer entrance slit. The diffraction grating disperses the incoming light, which reaches the 16x25 pixel detector array. The result is a "data cube" with 5x5 spatial pixels and 16 pixels in the spectral dimension.

