FIFI-LS: Commissioning Results - Randolf Klein
FIFI LS: the Field-Imaging Far-Infrared Line Spectrometer

• Far-infrared spectrometer employing two parallel channels:
  – Blue 50-120 μm
    5x5 pixel field of view: 6” per spatial pixel
  – Red 110-200 μm
    5x5 pixel field of view: 12” per spatial pixel

• Imaging spectrometer concept
  – Each channel: 5x5 spatial pixels
  – 16 spectral pixels per spatial pixels

• Spectral resolution: R=1000-3000
24 FIFI-LS Flights

FIFI-LS Flights
- Commissioning 1
- Commissioning 2
- OC3-B
- OC3-K

Thanks to Ryan Hamilton for the plot
Spectral Resolution Simulation vs. Lab Results

- Prediction Blue 2nd Order
- Data Mar13 10mBar Blue 2nd Order
- Data Oct13 1mBar Blue 2nd Order
- Prediction Blue 1st Order
- Data Mar13 10mBar Blue 1st Order
- Data Oct13 1mBar 1st Order
- Prediction Red
- Data Mar13 10mBar Red

Spectral Resolution $\frac{\lambda}{\Delta \lambda}$

$\lambda$ in $\mu$m

0, 40, 60, 80, 100, 120, 140, 160, 180, 200

0, 1000, 2000

Field Imaging Far Infrared Line Spectrometer

Institute of Space Systems

Universität Stuttgart
Sensitivity estimated from background noise
- Dashed: predictions
- Symbols: measurements
Summary

• FIFI-LS is a commissioned and reliable instrument soon to be accepted as a facility instrument.
• FIFI-LS provides unique access to FIR spectral mapping.
• It will be the work horse for all ISM cooling lines in
  ▪ Galaxies
    broad lines, medium spectral resolution sufficient
  ▪ Mapping large areas, galactic and extra galactic
    if high spectral resolution is not required
• About a dozen papers can be expected from Cycle 2 and 3.
• 19 proposals with 105h of FIFI-LS observations were approved for Cycle 4 indicating demand and community support.