

# Promoting Awareness of the Observatory for Next Generation Scientist Training

Bill Reach

Jürgen Stutzki

SOFIA International Summit Nov 2017

# SOFIA PhD Theses

18. "Water in the early solar system: Mid-infrared studies of aqueous alteration on asteroids", McAdam, M. 2017. University of Maryland, advisor J. Sunshine
17. "FLITECAM/SOFIA Commissioning and Early Science and A Study of Late-T Dwarf Color Outliers with NIRSPEC/Keck"  
Logsdon 2017. University of California Los Angeles, advisor: I. McLean
16. "Hot Electron Bolometer Mixers for THz Arrays", Büchel 2017. Cologne: Stutzki
15. "A Study of the Distribution of Carbon in the nearby Universe", Glück 2016.  
University of Cologne, advisor: J. Stutzki
14. "FIFI-LS – A Field-Imaging Far-Infrared Line Spectrometer for SOFIA: Completion of the Instrument, Laboratory and In-flight Calibration and Characterization"  
Colditz, S. 2016. University of Stuttgart, advisor: A. Krabbe
13. "A Study of Hypergiant Mass Loss in the Near-To-Mid Infrared: VY CMa, IRC +10420, mu Cep and rho Cas" Shenoy, D. P., 2016. Minnesota: Jones
12. "Superconductor Insulator Superconductor Mixer Devices with Gold Energy Relaxation Layers" Selig 2016. Cologne: Stutzki

# SOFIA PhD Theses

11. "Atmospheric calibration for sub-millimeter radio astronomy"  
Guan 2015. University of Cologne, advisor: J. Stutzki
10. "Probing the Extreme Environment of the Galactic Center with Observations from SOFIA/FORCAST". Lau 2014. Cornell University, advisor: T. Herter
9. "Aufbau, Charakterisierung und Inbetriebnahme des 1.4 THz Kanals des Heterodyn-Empfängers GREAT" Ricken 2011. University of Cologne, advisor: J. Stutzki
8. "Spectroscopic characterization of extrasolar planets from ground-, space- and airborne-based observatories" Angerhausen 2010. University of Stuttgart, advisor: A. Krabbe.
7. "Investigation of PAHs in Planetary Nebulae using FLITECAM"  
Smith, E. C., 2008. University of California, Los Angeles, advisor: I. McLean
6. "Aufbau, Optimierung und Charakterisierung der THz-Optik für GREAT auf SOFIA"  
Wagner-Gentner, A., 2007. University of Cologne, advisor: J. Stützki

# SOFIA PhD Theses

5. "Waveguide Heterodyne Mixers at THz-Frequencies - Superconducting Hot Electron Bolometers on 2-micron Si<sub>3</sub>N<sub>4</sub> Membranes for GREAT and CONDOR"  
Munoz, P. P., 2007. University of Cologne, advisor: J. Stützi
4. "Entwicklung und Aufbau eines BWO-basierten 1.9 THz Lokaloszillatoren für den Heterodynempfänger GREAT"  
Phillip 2007. University of Cologne, advisor: J. Stutzki
3. "Development of Ultrathin Niobium Nitride and Niobium Titanium Nitride Films for THz Hot-Electron Bolometers"  
Bedorf, S. H., 2005. University of Cologne, advisor: J. Stützi
2. "The High Resolution Spectrometer for SOFIA-GREAT: Instrumentation, Atmospheric Modeling and Observations"  
Villanueva, G. L., 2004. Albert-Ludwigs-Universitaet zu Freiburg, advisor; L. Reindl
1. "Searching for Young Low Mass Objects Using FLITECAM"  
Mainzer, A. K., 2003. University of California, Los Angeles, advisor: I. McLean

# Thesis Enabling Projects

- Cycle 6 introduced a “Thesis Enabling” proposal category
  - “aimed at enhancing the support for and execution of doctoral theses based, in a substantial part, on SOFIA observations”
  - Observations are put into Priority 1, which drive the scheduling and automatically carries to Cycle 7 if not executed in Cycle 6
  - provides 2 years of fully burdened graduate student support
- Received 10 proposals with “Thesis Enabling” option
  - Three were Priority 3 or Survey, will be normal observing projects
  - Two had Priority 2 ranking, and are accepted as “Thesis Enabling”
    - Mengyao Liu (U Florida/U Virginia with J. Tan)
    - Skarleth Moliño (Catholic U with T. Wilking)
- Plan to continue this program in Cycle 7
- **New:** Outstanding thesis award (\$2,500) announced at AAS

# SOFIA and PhD students (German situation)

- **Instrumentation program has been relatively successful towards PhD student involvement**
  - ◆ **FIFI-LS: 2 PhDs**
  - ◆ **GREAT/upGREAT: 5 PhDs**
- **science side: very hard because of**
  - initially low flight rate
  - long turn-around times for proposals and obs make-up
  - ◆ **Cologne**
    - so far, only 4 PhDs
      - › finished: Christian Glück (Quasar I.o.s., CII -emission)
      - › Cristian Guevara (13CII OT program)
      - › Monika Ziebart (M51 joined impact program)
      - › Slawa Kabanovic (Ori CII: 13CII analysis; promising results...)

# Proposal Workshops

- Science Center used to hold workshops (but they were poorly attended and had limited reach)
  - Cycle 7 German proposal workshop planned
- Now holding “Community Days”
  - Hosted by institution (or grouping)
  - SOFIA staff presentations + host short talks
  - Cycle 6: Michigan/Toledo, Wisconsin, CfA/Harvard, Maryland/Goddard

# Scientific Workshops & Conferences

- **Ringberg** conferences: 2015, 2017
  - Significant student talks, primarily German
- **Asilomar 2016**: “The Local Truth: Star-Formation and Feedback in the SOFIA Era -- Celebrating 50 Years of Airborne Astronomy”
  - 47 talks (32% by the SOC)
- **Ames 2018**: *under consideration* “Composition and Dynamics of the Interstellar Medium”
  - SOC being formed
  - to include non-SOC invited talks, more junior researchers



# “Cookbook” documentation

- To facilitate observers new to a particular type of observing, the science center is developing a set of Cookbooks for data analysis
- The data products are already calibrated so the cookbooks are to help take the next steps
  - Photometry, PSF fitting for FORCAST
  - Line fluxes from FIFI cubes
  - CLASS primer for GREAT