

SOFIA

Science e-Newsletter



December 2017

In this issue:

- SOFIA Cycle 6 Results Announced
- SOFIA Next Generation Science Instrument Draft Call for Proposals
- SOFIA Town Hall at the 231st AAS in Washington, D. C.
- Eric Becklin to present Russell Prize lecture at the AAS
- Recent SOFIA Science Highlight: Disk-mediated Accretion Burst in Young Stellar Objects
- SOFIA Employment Opportunities

SOFIA Cycle 6 Results Announced

The results of the SOFIA Cycle 6 Call for Proposals were announced on November 1, 2017. A total of 198 proposals were received, requesting 2,190 hours of observing time. A total of 66 proposals in priority 1 (will do) and 2 (should do) were selected. The total time award was ~500 hours. Cycle 6 observations will be conducted from February 2018 to February 2019.

A seven-week deployment to the Southern Hemisphere is scheduled, extending from early-June to mid-July 2018 employing two instruments: the German REceiver for Astronomy at Terahertz Frequencies (with seven-beam array, known as upGREAT) high-resolution far-infrared spectrometer and the High-resolution Airborne Wideband Camera-plus (HAWC+) far-infrared camera and polarimeter. These two instruments were in high demand for Cycle 6 observations. A Titan occultation observation is planned using the Focal Plane Imager-plus (FPI+) instrument. The Cycle 6 draft schedule was developed and approved by the program at the time of proposal acceptance and is to be updated and formally baselined by the SOFIA Program in January 2018. The abstracts of the awarded proposals will be also available at the SAO/NASA Astrophysics Data System (ADS).

The approved Cycle 6 programs with their [abstracts](#) and the [draft flight plans](#) are available on the [SOFIA Science Center website](#).

SOFIA Next Generation Science Instrument Draft Call for Proposals

The SOFIA Next Generation Science Instrument Draft Call for Proposals was released for Community Comment on November 3, 2017 (ROSES-17 Amendment 45: DRAFT D.13). The scientific community is invited to make comments on this draft solicitation, not only for clarity of the forthcoming solicitation release, but also for the inclusion of any ideas, strategies or recommendations that will lead to submission of proposed instruments capable of realizing transformational and compelling science. Similarly, the community is invited to comment on any constraints that may be overly restrictive and preventing the

submission of proposals with creative, high-risk/high-return ideas. Questions and comments on the draft text of this program element may be directed to kartik.sheth@nasa.gov through January 12, 2018.

The NSPIRES solicitation of this Draft Call (NNH17ZDA001N-SFNXGNI) [can be found here](#).

SOFIA Town Hall at the 231st AAS Meeting in Washington, D.C.

Date: January 11, 2018, Thursday, 7:30 – 8:30 p.m.

Location: Potomac D, Gaylord National Resort and Convention Center

The SOFIA science center will hold a SOFIA Town Hall at the 231st AAS meeting in Washington, D.C., and we will announce exciting, new opportunities with the observatory including the fourth generation instrument call for proposals.

SOFIA provides unique capabilities for high-resolution spectroscopy in the mid- to far-infrared and Terahertz regime to study the major cooling lines and continuum emission of molecular clouds, proto-planetary disks and accretion flows surrounding active galactic nuclei. Most recently, SOFIA has added a new capability to map magnetic fields in star-forming regions and in the environment around the super-massive black hole at the center of the Milky Way Galaxy. SOFIA also provides critical synergies with current [e.g., Atacama Large Millimeter Array (ALMA), Atacama Pathfinder Experiment (APEX), Hubble Space Telescope (HST), and Institute for Radio Astronomy in the Millimeter Range (IRAM)] and upcoming observatories [e.g., James Webb Space Telescope (JWST), Origins Space Telescope (OST), and the Wide-Field Infrared Survey Telescope (WFIRST)]. This Town Hall will highlight the current status, new instruments, and opportunities for community participation including a new set of key programs to maximize the science impact, with associated funding. There will be an opportunity for questions and answers, and community inputs about SOFIA mission, operations, and science.

Eric Becklin to Present Henry Norris Russell Lecture at the AAS Meeting

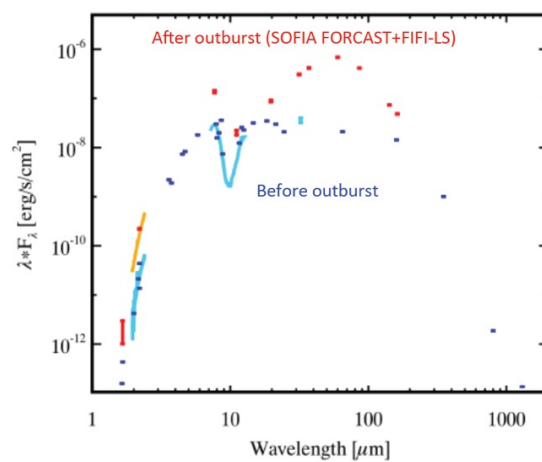
Date: January 11, 2018, Thursday, 4:30 – 5:30 p.m.

Location: Potomac AB, Gaylord National Resort and Convention Center

Eric Becklin, SOFIA's chief science advisor and emeritus professor at UCLA, will give his Henry Norris Russell Lecture "Fifty-four Years of Adventures in Infrared Astronomy" during the 231st AAS meeting as a recipient of the American Astronomical Society's 2017 Russell Lectureship. The prize was awarded "for lifetime preeminence in astronomical research and his leadership role over the last half-century in turning infrared astronomy into a fundamental tool for understanding the Universe."

Becklin has pioneered discoveries using infrared observations in a wide range of contexts, including the galactic center, star-forming regions, evolved stars, brown dwarfs, exoplanets, and the obscured nuclei of other galaxies, with telescopes on the ground, in the stratosphere, and in space.

Recent SOFIA's Science Highlight: Disk-mediated Accretion Burst in Young Stellar Objects (Caratti o Garatti et al. *Nature*, 2017, 13, 276)



Pre- (cyan and blue) and outburst (orange and red) spectral energy distributions (SEDs) of S255IR NIRS 3. Dark colors indicate photometric measurements and light colors denote spectra. The pre-outburst SED was obtained by combining ESO/VLT, UKIDSS, SPITZER/IRAC and MIPS, MSX, AKARI, and BGPS. The outburst SED was observed using data from PANIC, GROND, SINFONI, SOFIA/FORCAST (7.7, 11.1, 19.7, 31.5, and 37.1 μm in red) and FIFI-LS (60, 90, 140, and 160 μm in red) taken in February 2016.

Solar-mass stars form via circumstellar disk accretion (disk-mediated accretion). Theoretical studies and observations indicate that this process is likely episodic in the form of accretion bursts, possibly caused by disk fragmentation. Numerical simulations suggest that high mass stars form by a similar process. Accordingly, disk-mediated accretion bursts should also occur in high mass young stellar objects (HMYSO).

Caratti o Garatti et al. (2017) reported the discovery of the first disk-mediated accretion burst from a $\sim 20 M_{\text{Sun}}$ HMYSO using near-IR observations with PANIC (Panoramic Near Infrared camera for [Calar Alto observatory](#) – CAHA), the Gamma-Ray Burst Optical/Near-Infrared Detector (GROND), and the Spectrograph for INtegral Field Observations in the Near Infrared (SINFONI), and mid- and far-IR observations using SOFIA's Faint Object infraRed CAmera for the SOFIA Telescope (FORCAST) and Far Infrared Field-Imaging Line Spectrometer (FIFI-LS) observations.

The FIFI-LS data show a large increase in flux. The burst corresponds to an increase in accretion luminosity of $1.3 \times 10^5 L_{\text{Sun}}$, and an energy release of 1.2×10^{46} erg and the burst continued until mid-April, 2016. SOFIA observations identify episodic disk accretion as the common mechanism of star formation across the entire stellar mass spectrum.

SOFIA Employment Opportunities

The SOFIA project provides exciting employment opportunities as listed below with the SOFIA Mission Operations contract renewal of USRA.

Instrument Scientist (519-500 and 654-500)

USRA is seeking experienced observational astronomers to support the SOFIA guest investigator community and instrument teams in the definition, acquisition, and analysis of observations, as well as general user support and observatory operations. More information [here](#) and [here](#).

Mission Director (672-500)

The Mission Director (MD) has responsibility for conducting SOFIA's Science onboard operations and becomes the senior Mission Operations Support person on the flight responsible for command and control of overall mission operations and the Observatory's mission systems. [More information](#).

Science Outreach Specialist (651-500)

The Science Outreach Specialist independently implements science outreach activities designed to increase and enhance the scientific engagement and output of SOFIA. [More information.](#)

Observatory Scientist (652-500)

The Observatory Scientist enhances the scientific productivity of SOFIA by communicating and working directly with the current and potential guest observers to develop observing projects and bring them to fruition. [More information.](#)

Facility Science Instrument Maintenance Engineer (650-500)

The Facility Science Instrument (FSI) Maintenance Engineer is responsible for maintaining the FSIs to support the observing community once the SI is delivered to the Science Mission Operations (SMO). [More information.](#)

Postdoctoral Fellow (667-500)

The Postdoctoral Fellow will work in the SOFIA/USRA polarimetry group in the area of interstellar grain alignment physics, with an emphasis on polarimetric observations. [More information.](#)

Postdoctoral Fellow - Support Scientist(s) (686-500 and 687-500)

The Postdoctoral Fellow / Support Scientist focuses on assisting SOFIA Instrument Scientists in their support of facility instruments and their operations. More information [here](#) and [here](#).

More information about USRA job opportunities [can be found here](#).

Please feel free to direct questions and comments to the SOFIA Science Center help desk: sofia_help@sofia.usra.edu.

