Far-Infrared Science Interest Group

Newsletter | Number 1 | October 2018

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Letter from the SIG Leadership Council

We are delighted to share with you the inaugural newsletter from the Far-Infrared Science Interest Group (FIR SIG).

This is an exciting time for the far-infrared community. Current facilities such as SOFIA, ALMA, Spitzer, and balloon-based observatories are producing exciting discoveries in all areas of astronomy, from exoplanets to cosmology, and are paving the way for future-generation observatories. There also exists a rich and diverse legacy archive of infrared observations, from facilities such as IRAS, ISO, and Herschel.

With exciting times come new challenges. Key priorities for the FIR community include defining the science themes where infrared observations can make important advances, and developing the key technologies needed to address these themes. These two priorities go hand-in-hand, as new technology developments make possible new observations, pushing infrared astronomy into unexplored regimes. These priorities will be key inputs to the upcoming decadal survey.

With these challenges in mind, the FIR SIG aims to collect community input and help shape the long-term objectives of FIR astrophysics. This newsletter series is part of this effort; it will present recent news, science highlights, and mission and technology updates and developments. We expect to publish a new newsletter each semester. A key part of this newsletter series is articles from the community at-large. Going forward, please send us updates on your recent scientific and technological advances! The more the community participates, the more useful this newsletter will be for the FIR community as a whole.

In addition to this newsletter, the FIR SIG is working to enhance the presence and voice of FIR astronomy in the broader astronomical community. Our activities include organizing:

- A monthly webinar series—see our website for the schedule and recordings of past webinars: https://fir-sig.ipac.caltech.edu
- Splinter sessions at winter AAS meetings
- Focused workshops on specific aspects of FIR astronomy
- Review articles and white papers

In all of these efforts, we are keen to increase the participation of early-career scientists of diverse backgrounds. Reach out to the FIR SIG leadership council to get involved!

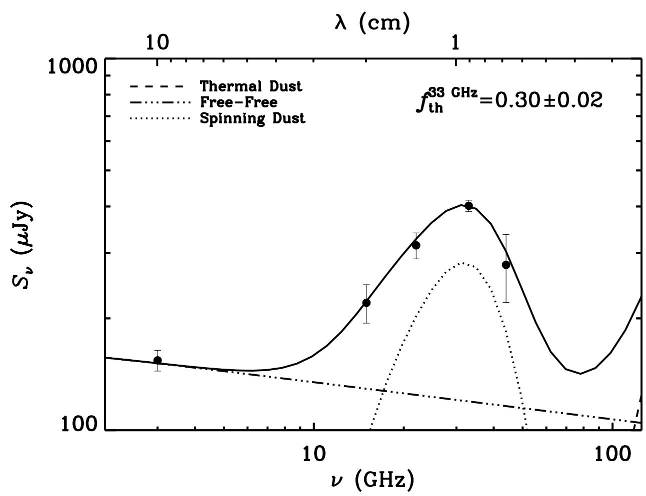
Sincerely,
Meredith MacGregor (newsletter editor)
and the entire FIR SIG Leadership Council

Anomalous Microwave Emission in NGC 4725

Written by: Eric Murphy (NRAO)

Precise characterization and separation of foregrounds remains a major challenge for current and future Cosmic Microwave Background (CMB) experiments (e.g., BICEP2/Keck Collaboration et al. 2015; Planck Collaboration et al. 2016), which includes a prominent and enigmatic component of Anomalous Microwave Emission (AME). It has been over 20 years since the initial discovery of excess ~30 GHz (~1 cm), dust-correlated emission in CMB experiments (e.g., Kogut et al. 1996; Leitch et al. 1997), yet our current understanding of the physical mechanism and conditions powering AME remains highly incomplete (see Dickinson et al. 2018 for a review).

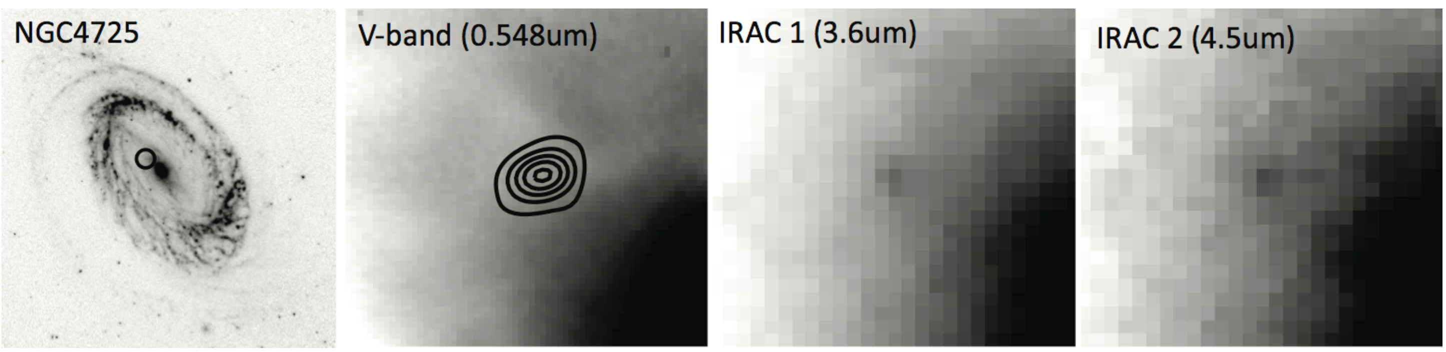
Investigations within the Galaxy have uncovered strong detections of AME in discrete locations adjacent to larger HII complexes (e.g., Dickinson et al. 2009), consistent with the theoretical expectation that it is a ubiquitous emission component in the interstellar medium of galaxies. Unexpectedly, a recent multiwavelength investigation of star formation activity towards 10 HII region complexes in the nearby galaxy NGC 6946 (d = 6.8 Mpc; Karachentsev et al. 2000) uncovered excess 1 cm emission, resulting in the first extragalactic detection of AME (Murphy et al. 2010). Here we report a second such discovery of an additional detection of AME in the star-forming disk of NGC 4725 (d = 11.9 Mpc; Freedman et al. 2001), indicating how rare such objects are (Murphy et al. 2018a). NGC 4725 B appears consistent with a highly-embedded ($A_V > 5$ mag) nascent star-forming region, in which young (< 3 Myr) massive stars are still enshrouded by their natal cocoons of gas and dust, lacking enough supernovae to produce any measurable synchrotron emission. More work is needed to understand the physical underpinnings that drive AME within external galaxies on all physical scales.



The radio spectrum of NGC 4725 B, a second detection of AME from a discrete, likely nascent star-forming region in this galaxy's inner disk (Murphy et al. 2018b). In the top right corner, the thermal (free-free) emission fraction is given, and is less than the anomalous microwave component. The best-fitting spinning dust model is for WNM conditions with n_{ISM} =1.25 cm^{-3} and T = 1000 K, and having a 33 GHz thermal radio fraction of 0.30 ± 0.02.

Similar to the detection of AME within the disk of NGC 6946, we find significant AME in only a single, discrete region of NGC 4725. These results suggest that radio observations from external galaxies may contain appreciable amounts of AME, complicating the typically assumed picture that the extragalactic radio emission is only comprised of non-thermal and free-free emission. While certainly true for discrete regions, it remains less clear how much of an effect this component has for interpreting globally integrated measurements of galaxies. For instance, Peel et al. (2011) did not find a strong excess in the WMAP/Planck spectra for three nearby bright galaxies, M 82, NGC 253, and NGC 4945, suggesting that AME may not affect simple two-component modeling of extragalactic sources on a global scale. However, this may not be the case at high redshift where galaxies have been modeled to have significantly different grain properties (e.g., Maiolina et al. 2004; Perley et al. 2010). For instance, dust grain properties of low metallicity populations at high redshift are found to be similar to that of the Small Magellanic Cloud (e.g., Reddy et al. 2015, 2018), a system that appears to contain a significant amount of AME arising from a combination of spinning and magnetized nano-grains (Draine & Hensley 2012). More work is clearly needed to understand the physical underpinnings that drive AME within external galaxies on all physical scales.

The full paper can be found here: http://adsabs.harvard.edu/abs/2018ApJ...862...20M



An 8 μm image of NGC 4725 with the location of NGC 4725 B identified. The next three panels show a 15 arcsec x 15 arcsec zoom in on the region of interest in the V (0.548 μm), IRAC 1 (3.6 μm), and IRAC 2 (4.5 μm) bands. The 33 GHZ contours are shown in the V-band image. There is no identifiable optical counterpart, however, distinct counterparts are seen at both 3.6 and 4.5 μm, indicating a large amount of small dust grains.

SuperSpec: The On-Chip Spectrometer

Written by: Jordan Wheeler (University of Colorado)

SuperSpec is a new technology for millimeter and submillimeter spectroscopy being developed by collaboration between Caltech, the Jet Propulsion Laboratory, University of Chicago, University of Colorado, Arizona State University, Cardiff University, and Dalhousie University. It is an on-chip spectrometer developed for multi-object, moderate resolution (R = ~300), large bandwidth survey spectroscopy of high-redshift galaxies for the 1 mm atmospheric window. SuperSpec targets the CO ladder in the redshift range of z = 0 to 4, the [CII] 158 μm line from z = 5 to 9, and the [NII] 205 um line from z = 4 to 7. All together these lines offer complete redshift coverage from z = 0 to 9. SuperSpec employs a novel architecture in which titanium nitride kinetic inductance detectors are coupled to a series of half-wavelength resonant microstrip filters along a single microwave feedline instead of using dispersive optics. Astrophysical radiation is sent into this feedline from a simple on-chip antenna with an attached silicon lens. This construction allows for the creation of a full spectrometer occupying only 20 cm squared of silicon, a reduction in size of several orders of magnitude when compared to standard grating spectrometers. This small profile enables the production of future multi-object spectroscopic instruments required as the millimeter-wave spectroscopy field matures. The SuperSpec collaboration is currently in preparation for a deployment at the beginning of next year on the Large Millimeter Telescope. The demonstration instrument will be a 3-pixel instrument, 6 individual spectrometer devices in two different polarizations. Testing of full 300 channel spectrometers is currently underway, for which we are achieving 95% detector yields.

To learn more, go to:

- https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10708/107080P/SuperSpec--the-on-chip-spectrometer--characterization-of-a/10.1117/12.2314364.full
- https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10708/107081O/The-design-and-characterization-of-a-300-channel-optimized-full/10.1117/12.2313666.full

Figure 1: (Left) Photo of Jordan Wheeler in Japan presenting SuperSpec at a low-temperature detector conference. (Right) One of the latest 300 channel filterbank chips.

The Origins Space Telescope

Written by: Margaret Meixner (OST Study Chair, STScI) on behalf of the OST Science and Technology Definition Team

The Origins Space Telescope (OST) is a science and technology definition study for NASA Headquarters for the 2020 Astronomy and Astrophysics Decadal survey. OST, operating from 3 to 600 microns, will have a factor of 1000 improved sensitivity over prior far-infrared missions, enabled by cold (4.5 K) optics and sensitive detectors. Three science themes are featured that address the following questions: How does the Universe work? How do galaxies form stars, make metals and dust, and grow their central supermassive black holes from reionization to today? How did we get here? How do the conditions for habitability develop during the process of planet formation? Are we alone? OST will assess the habitability of nearby exoplanets and search for signs of life. Major new results in all three themes can be accomplished within one year of time. Moreover, these science themes have defined observatory capabilities that enable a broad range of general astronomical science.

The Baseline Mission Concept for OST is for a 5.9 m circular aperture with a JWST sized collecting area, maintained at a temperature of 4.5 K by cryo-cooler technology established by the JWST mission. Three instruments provide innovative spectroscopy and imaging. The OST Survey Spectrometer (OSS) can survey the sky over its whole wavelength range of 25 and 590 µm with low resolution spectroscopy with R (λ/Δλ) of ~300. OSS has two higher spectral resolution modes: a Fourier transform spectrometer (FTS) with R~43,000 at 112 µm and an etalon with R~325,000 at 112 µm. The Mid-infrared Transit Spectrometer, which operates between 2.8 and 20 µm, has an ultra-stable spectrometer channel built to do exoplanet transits with high precision. The Far-infrared Imager and Polarimeter (FIP) does broad band imaging at 50 and 250 µm over large angular areas. FIP also does polarimetric imaging in the bands. The observatory will be able to scan at 60 arcseconds per second to enable large area surveys.

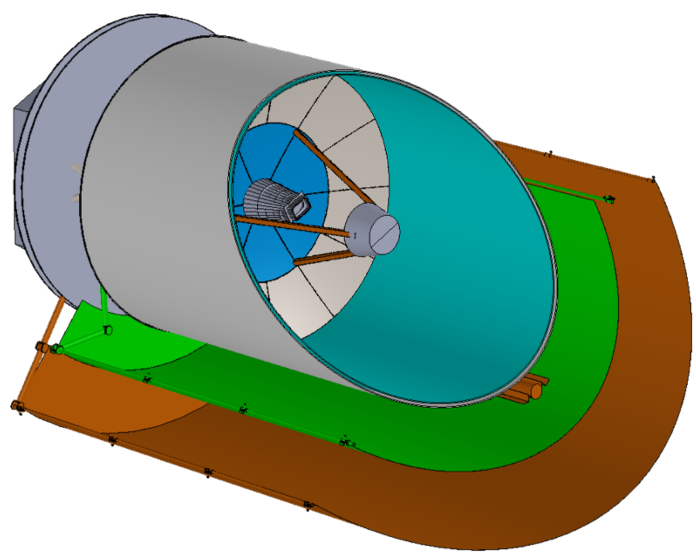


Figure 1: Baseline Mission Concept for OST

The final report will also feature a few upscope options. The Heterodyne Receiver for OST (HERO) uses an array of 9 coherent detectors over the wavelength range of 111 to 617 µm to achieve the highest spectral resolutions of R~10^6 to 10^7 for measurements of simultaneous spectral lines. FIP has an option to include the 100 and 500 micron channels, and a second option to double the pixels. OSS also has an option to double the pixels.

The OST Science and Technology Definition Team (STDT) is currently busy writing the final report for the study. More information on the mission concept and design for OST is available on the STDT website at: https://origins.ipac.caltech.edu.

Members of the STDT will be at the January AAS meeting to present and discuss the science and design of OST. So far, the OST study has been science driven by the astronomy community. We welcome you to contact the OST with your science questions and ideas by emailing us at ost_info@lists.ipac.caltech.edu or drop by our posters, talks, and tables at the AAS.

SOFIA Update

Written by: Kimberly Ennico Smith (SOFIA Project Scientist, NASA Ames)

SOFIA began Cycle 6 in May 2018, completed a very successful 5th New Zealand deployment, and resumed northern-hemisphere observations in August 2018. The call for Cycle 7 observations and the inaugural SOFIA Legacy Science Program closed on September 7, 2018. Follow the latest details of SOFIA at https://sofia.usra.edu.

Recent Science Highlight

Entitled "Anatomy of the massive star-forming region S106," Schneider, N. et al. A&A 617, A45 (2018) provides a fresh in-depth look at this complex bipolar star formation region, 1.7 kpc away in Cygnus. Its distinctive features are the surrounding gas cloud's hourglass shape and visible turbulence. The team aims to uncover the mechanism of high-mass star formation, particularly in an object like S106 which has been recently revealed to be a close (separation < 0.2 AU), massive binary system, most likely consisting of a late O and a late B star, being responsible for the bipolar emission nebula. Here they combine the spatial, velocity, and intensity information of atomic and molecular line observations and continuum from the FIR to the millimeter. Specifically, they compare measurements by SOFIA GREAT [OI] (63.2 µm), CO 16-15 (162.8 µm), [CII] (157.7 µm), CO 11-10 (236.6. µm) plus IRAM H13CO+ 1-0 and continuum (Spitzer, SOFIA FORCAST, Herschel, VLA, MAMBO, and Subaru). Taking advantage of the high spatial, and very high spectral (1 km/s) resolution of SOFIA GREAT, they de-compose the emission from the region, to form a comprehensive picture of the interaction of the two massive stars and their radiation with the surrounding gas and dust which cannot be explained by a simple star-disk system. They pose the question: is the dark lane separating the two lobes of the nebula in visible and infrared images a filamentary structure essentially tracing a flow that has its end at the central source binary? S106 offers this rare possibility of studying in detail the late stages of the formation of massive close binary systems and their circumstellar environments, both immediate and extended.

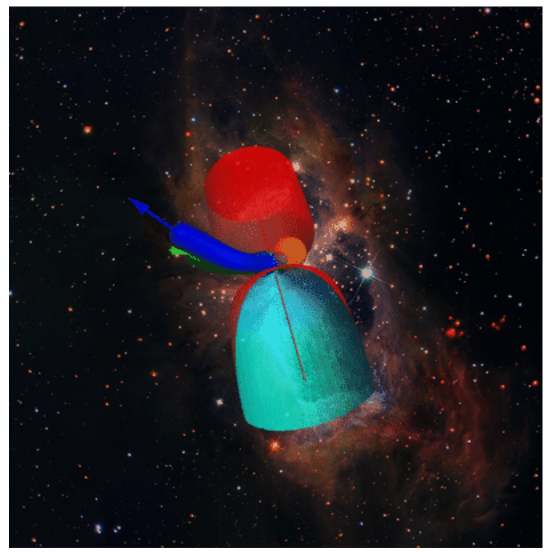


Figure 1: Schematic of bi-polar nebula S106 from the Schneider et al. (2018 study overlaid on an ESO image.

Announcement

Taken in July 2018, and released to the community in August 2018, SOFIA has observed the infrared radiation emitted by the dust and the magnetic fields in 30 Doradus, a star-forming region within the Tarantula Nebula in the Large Magellanic Cloud. Using the observatory's newest instrument HAWC+, which has a device called a polarimeter that maps celestial magnetic fields, the SOFIA team observed

30 Dor at a range of wavelengths sensitive to dust temperatures between 10-100 Kelvin. These can be used to study potential disturbances on the magnetic fields in the dense and compact regions of 30 Dor, as well as the large-scale magnetic fields governing the whole structure of the nebula — both of which may impact star formation. Instructions to obtain data and data analysis recipes are available here: https://go.nasa.gov/2KVPPba

Milestone

SOFIA will be on hand for the January 2019 AAS meeting and will be based at nearby Boeing Field. Buses will depart the Seattle Convention Center at regular intervals on Monday morning, Jan. 7, and throughout the day on Tuesday, Jan. 8 and Wednesday, Jan. 9. Guests will tour the interior of the observatory while learning more about SOFIA's recent science observations. There is no cost for the tours, however, space is limited. SOFIA tours are extremely popular. We anticipate releasing full tour details on Nov. 1. A SOFIA Town Hall will be held on the evening of Tuesday Jan 8th, where the latest changes and opportunities in the program will be presented. Please check the AAS Schedule for details.

To learn more, subscribe to the SOFIA Science newsletter: https://tinyurl.com/y9walphp

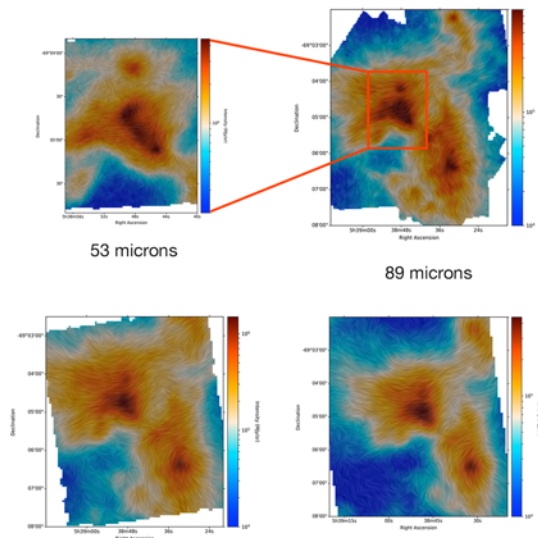


Figure 2: FIR images with magnetic field maps for 30 Doradus. The data is available to the community for analysis.

15 Years in Space for NASA's Spitzer Space Telescope

Written by: Michael Werner (Spitzer Project Scientist, JPL)

The Spitzer Space Telescope continues its exciting and efficient scientific program. The Cycle 14 call for proposals, issued in December 2017, received a 4 times oversubscription in time requested. Of the eight priority 1 large programs selected, 4 are led by new Spitzer PIs and four are led by women. Execution of the 6000 hours of time selected for Cycle 14 is now well underway. Because this was the last call for proposals planned before the end of the mission, currently forecasted for January 2020, at least 1,000 hours of DDT time is available for response to late-breaking scientific needs.

Recent scientific highlights demonstrate Spitzer's uncanny ability to respond to new challenges while returning as well to our major themes of the past few years. In the former category, Spitzer continues to study infrared transients with exciting results. Mansi Kasilwal and her team have found as many dust-embedded supernovae in a sample of 10 galaxies as were identified optically, perhaps doubling the estimate of the global supernova rate. In addition, Kasliwal's team has identified an infrared counterpart to the binary neutron star coalescence reported by LIGO and Fermi in 2017, and is positioned to follow up additional gravitational wave events once LIGO restarts in early 2019.

Also in the new science category, David Trilling et al. are preparing a paper reporting Spitzer observations of the interstellar object 1I/'Oumuamua. Heroic efforts by our operations teams and the ephemeris gurus at JPL made it possible to observe this unique interloper only a month after it was discovered.

Spitzer has continued to explore the distant Universe, studying high redshift galaxies and identifying targets for JWST to pursue even before its own surveys are underway. The latest example is a galaxy at a redshift of z=9.11, as determined by ALMA observations of a highly redshifted [OIII] fine structure line at 88 µm rest wavelength. WFC3 and Spitzer together suggest that the old stellar population seen primarily by Spitzer formed when the Universe was only 250 MYr old [z>15] and that a younger stellar population is required to ionize the giant HII regions producing the [OIII] emission.

Spitzer has also continued its sterling work on exoplanets. The first TESS targets are being queued up for observation with Spitzer, via either several approved programs or DDT requests. This follows on a successful program of observations of K2 targets which were of great value in pinning down exoplanetary ephemerides to assure reliable and efficient acquisition with JWST. This TESS follow up will be of greater importance now that the JWST launch has slipped into March of 2021, as the ephemeris uncertainty grows linearly with time. Spitzer has also just completed its 5th season of microlensing parallax observations, this time in collaboration with the OGLE and Korea Microlensing Telescope (KMTnet) surveys, and determined the parameters of 175 microlensing events (762 over the five seasons), including three planets in 2018 bringing the total of microlensing planets with good mass measurements from Spitzer to 11. Another microlensing campaign is scheduled in Cycle 14, as are comprehensive measurements of exoplanet phase curves and a search for transiting companions to cool dwarf stars which are seen equator on.

Some recently compiled statistics provide an assessment of the impact of Spitzer over its 15+-year lifetime. During this time, we have supported over 970 distinct Principal Investigators. We executed over 36,000 hours of observations during the cryogenic mission, which ended in 2009, and have just passed the 70,000 hour mark for the subsequent warm mission. During these 15 years, our efficiency for the execution of science observations (including calibrations) has averaged over 80%. It is not surprising, therefore, that our count of refereed publications exceeds 8,000, or about 1.5 papers published every day of the 15-year science mission!

The scientific impact of Spitzer cannot be inferred from these statistics alone, however. For this we refer you to a forthcoming book which reviews Spitzer science: “More Things in the Heavens: How Infrared Astronomy is Expanding our View of the Universe”, by Michael Werner and Peter Eisenhardt, to be published by Princeton University Press in 2019.

42^{nd} COSPAR Meeting

Held 14-22 July 2018 in Pasadena, CA

Written by: Michael Zemcov (RIT)

The 42nd Assembly of the Committee Space Research (COSPAR) met in Pasadena, CA over July 14 – 22 of this year. COSPAR, the premier international conference on space physics and instrumentation, brought together a cohort of over 1,000 scientists and engineers to discuss the latest results in a wide range of fields including human spaceflight, heliophysics, planetary science, Earth observing and climate studies, and astrophysics.

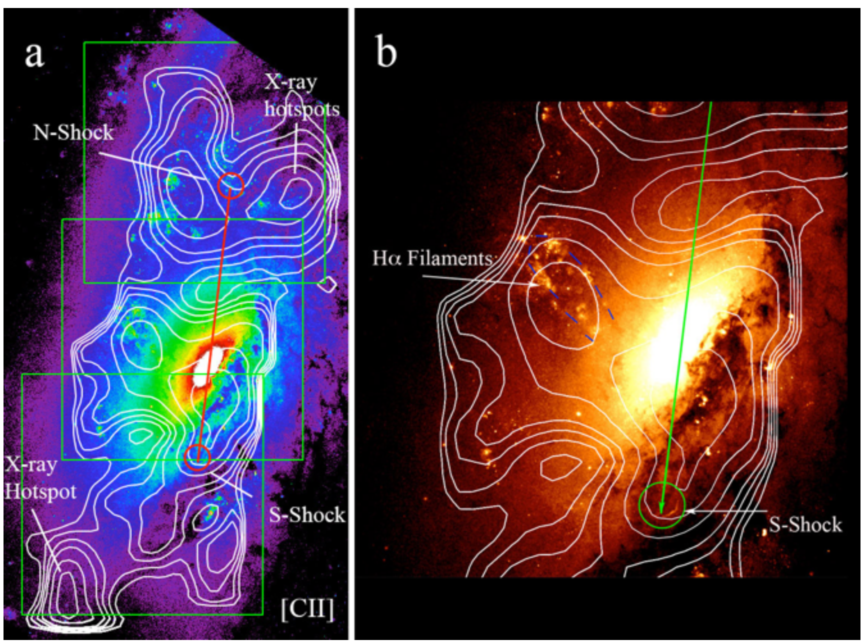


Figure 1: (a) contours of the [CII] emission superimposed on a false-color representation of the HST F657N WFC3 image over the inner 3 kpc of NGC 4258, and (b) a zoom-in on the [CII] emission associated with the minor-axis emission. In panel (a) the green squares show the footprint of the observed regions with SOFIA FIFI-LS. Note the distribution of Hα emission associated with the minor axis [CII] contours and the elongation of the [CII] emission along the southern jet. The jet is marked with a line ending in two circles that surround the bow-shock structure (Appleton et al. 2018, in prep).

Far-IR science and instrumentation were well-represented at the conference, which included several sessions touching on topics salient to the FIR, as well as a session running over two days specifically devoted to talks and posters on FIR and sub-mm science. This session, entitled 'Star Formation and Interstellar Processes Over Many Scales,' was organized by Jeonghee Rho and Randolf Klein. It included four sessions devoted to (i) Galactic Star Formation, (ii) Star Formation in Galaxies, (iii) the Interstellar Medium and Extreme Environments, and (iv) Magnetic Fields and Chemistry in the ISM. In all, 18 twenty-minute talks were given, which featured a wide variety of new results from SOFIA (talks by Megeath, Huard, Lau, Appleton; see Figure 1, Pineda, and Rho), a number of state-of-the-field reviews (by Andre, Klein, Schultz, Tielens, and Dowell), several other observations and results (Sahai, Sabha, and Bernard), and presentations on future instruments and measurements (Scott, Ennico, Majumda, and Bradford). A poster session showcasing over a dozen posters was also featured. FIR results were also highlighted in a session entitled 'The Multi-Wavelength View of the Universe as

OTHER NEWS

Triggered by the RadioAstron Mission,' organized by Leonid Gurvits and Yuri Kovalev. In particular, new science results involving maser emission from water were presented (talks by Moran and Kurtz).

At shorter wavelengths, a two-day session on 'Large Space-Based Optical and Infrared Surveys' organized by David Spergel and Jason Rhodes had a number of talks about existing and upcoming near-IR and IR missions. The session featured a wide variety of presentations on Euclid, WFIRST and LSST, as well as presentations on SPHEREx (Dore) and the Origins Space Telescope (Scott). This session featured a panel discussion at its conclusion, as well as an associated poster session.

Finally, a special panel session entitled 'Near-Term Exploration of the Interstellar Medium' organized by Ralph McNutt and Robert Wimmer-Schweingruber was devoted to a new mission concept for an ISM mission that would directly sample the local ISM, travelling to 1000 AU in a 50-year mission launched sometime in the 2030s (Figure 2). This session included some discussion of near- and far-IR astrophysical measurements that would be possible from the outer solar system (talks by Casey and Zemcov). Given the breadth of topics and audiences present at COSPAR, FIR astrophysical science was represented very well, and a wide range of important results and outlooks for not only the national but world-wide FIR community were featured.

Figure 2: The Interstellar Mission Concept will directly sample the ISM in a 50-year mission. A low spatial-resolution sub-mm instrument could be included as part of the instrument package, and would image the Kuiper belt, thermal emission from the galaxy, and possibly other targets from 1000 AU.

Astrophysical Frontiers in the Next Decade and Beyond

Held 26-29 June 2018 in Portland, OR

From: NRAO Newsletter

This ambitious, recently held conference brought a broad cross-section of the astronomy community to Portland, Oregon to discuss the most pressing astrophysical questions as preparation for the Astro 2020 Decadal Review process. With 200+ registrants, including 70+ students, the meeting showcased strong community support from current and next-generation users to pursue cutting-edge space and ground-based facilities to tackle the most pressing questions in astrophysics, with a special emphasis on the ngVLA.

The science program included invited plenary speakers and parallel sessions of invited and contributed presentations covering: (a) Origins of Exoplanets and Protoplanetary Disks; (b) Mechanisms of Galaxy Evolution; and (c) Black Holes and Transient Phenomena. These science areas are multi-wavelength and multi-messenger. Conference talks and posters are being posted to the meeting website as they are received.

Given the positive feedback received, coupled with the enormous participant enthusiasm, especially during discussions in the breakout sessions, plans are already being made for a comparable cross-discipline/wavelength conference in 2020.

UPCOMING EVENTS

18-19 Oct 2018 – Velocity-resolved far-infrared imaging spectroscopy of the future: A symposium honoring Paul F Goldsmith

Observatoire de Paris

http://vm-users-lerma01.obspm.fr/~dlis/Symposium2018.html

8 Jan 2019 – FIR SIG Splinter Session at 233rd AAS Meeting

Washington State Convention and Trade Center, Seattle, WA

**Final date and more details forthcoming*

7 Jan 2019 – The Role of Magnetic Fields and Filaments in Star Formation at 233rd AAS Meeting

Washington State Convention and Trade Center, Seattle, WA

https://www.sofia.usra.edu/science/meetings-and-events/events/special-session-role-magnetic-fields-and-filaments-star-formation

7-9 Jan 2019 – Tour of the SOFIA Airborne Observatory at 233rd AAS Meeting

Washington State Convention and Trade Center, Seattle, WA

9 Jan 2019 – Exploring our Cosmic Origins: New Results from the Atacama Large Millimeter/submillimeter Array at 233rd AAS Meeting

Washington State Convention and Trade Center, Seattle, WA

https://science.nrao.edu/science/meetings/2019/aas-233/exploring-our-cosmic-origins

9 Jan 2019 – Theoretical Advances Guided by Radio-Millimeter-Submillimeter Arrays

Washington State Convention and Trade Center, Seattle, WA

https://science.nrao.edu/science/meetings/2019/aas-233/ngvla_special_session

9-12 Jan 2019 – National Radio Science Meeting

University of Colorado, Boulder, CO

https://nrsmboulder.org/

20-23 Jan 2019 – Spectroscopy with SOFIA: new results & future opportunities

Schloss Ringberg, Germany

https://events.mpifr-bonn.mpg.de/indico/event/87/

14-19 Apr 2019 – First IAU Symposium on Laboratory Astrophysics: From Observations to Interpretation (IAU S350)

Cambridge, UK

https://www.iau.org/science/meetings/proposals/loi/2019/1991/

20-23 May 2019 – Exploring the Infrared Universe: The Promise of SPICA

Create, Greece

http://www.spica2019.org/

FIR SIG Leadership Council

The current members of the Far-IR Science Interest Group (SIG) Leadership Council are:

Duncan Farrah (Co-Chair)	**University of Hawaii**
Jeyhan Kartaltepe	**Rochester Institute of Technology**
Tiffany Kataria	**Jet Propulsion Laboratory**
Jens Kauffmann	**Massachusetts Institute of Technology**
Lisa Locke	**Jansky Fellow, National Radio Astronomy Observatory**
Enrique Lopez Rodriguez	**SOFIA Science Center**
Meredith MacGregor	**NSF Fellow, Carnegie Department of Terrestrial Magnetism**
Elizabeth Mills	**Boston University**
Eric Murphy	**National Radio Astronomy Observatory**
Omid Noroozian	**National Radio Astronomy Observatory**
Naseem Rangwala (Co-Chair)	**SOFIA Science Center**
Dave Sanders	**University of Hawaii**
JD Smith	**University of Toledo**
Johannes Staguhn	**Johns Hopkins University, NASA GSFC**
Mike Zemcov	**Rochester Institute of Technology**

Additional information about the FIR SIG can be found at our website:

https://fir-sig.ipac.caltech.edu/

Plans for the Decadal Survey

The FIR SIG Leadership Council is planning to coordinate white papers for the upcoming Decadal Survey in a joint effort with the Origins Space Telescope (OST). The POC for OST is Lee Armus and the POC for FIR SIG is Eric Murphy. Plans are being developed for a community-wide telecon to solicit feedback and for community members to sign up to lead/co-lead/write white papers. The FIR SIG has developed an initial list of potential white papers as a Google Doc that we plan to distribute through our mailing list prior to the telecon. Decadal plans will also be discussed extensively at our FIR SIG splinter session at the winter AAS meeting. However, since white papers are due a week after the AAS, this discussion will mostly summarize what is being submitted by the FIR community.

This planned community effort will allow people to sign up to participate in writing white papers that are of interest to them and to cite other white papers appropriately. The overall aim is to ensure that the FIR astronomy community speaks with a coherent voice in order to maximize our impact in the decadal review process.