

# SOFIA

## Science Newsletter



May 2022

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## Project Statement

### Statement to the Scientific Community on the Status of Cycle 10

NASA and DLR recently announced the [decision to conclude the SOFIA Mission](#) at the end of FY2022. SOFIA continues to operate during this fiscal year (FY2022) to fulfill the scientific work that we have committed to do this year. Due to this decision to conclude the mission, NASA will not be making Cycle 10 selections. We thank the scientific community for their interest and support of the SOFIA mission, including the teams who submitted proposals for Cycle 10. We would like to point you to the many data products in the [SOFIA archive on IRSA](#). Additionally, SOFIA has an ongoing call for [Archival Research Programs](#) to fund research with data products in the SOFIA archive. We would like to extend our gratitude to the SOFIA scientific community and look forward to seeing the results of Cycle 9 and your archival research proposals.

## Summer Series

### SOFIA Summer Series: Synergies Within the Infrared Archive

SOFIA Science Center presents the Summer seminar series 'Synergies within the Infrared Archive'. The series, supporting the latest [Archival Research Program Call](#), consists of online talks by members of the community, spanning a large range of astrophysical topics and highlighting how infrared archival data from different instruments can be used together to leverage scientific information. The five-week series features a 45-minute talk, followed by Q&A, on **Fridays at 12:00pm EDT/9:00am PDT**, starting 13 May and concluding on 10 June 2022.

All talks are hosted on Webex, see [connection details](#).

- May 13: [Wafa Zakri \(U. Toledo\)](#)
- May 20: [Ed Montiel \(SOFIA/USRA\)](#)
- May 27: [Irina Smirnova-Pinchukova \(MPIA\)](#)
- June 3: [Collin Knight \(UWO\)](#)
- June 10: [Fiorella Polles \(SOFIA/USRA\)](#)



## SOFIA Legacy Results: Magnetically-Driven Flows in NGC 1097

Magnetically-driven flows feed the super massive blackhole at the center of NGC 1097, a barred spiral galaxy with a starburst ring surrounding an active galactic nucleus. SOFIA investigated this long-standing problem of the large-scale transfer of matter from the body of the host galaxy to the active nucleus.

SOFIA measured the magnetic fields in the starburst ring with the High-resolution Airborne Wideband Camera-plus (HAWC+) at 89 microns with an angular resolution of 7.8" (~720 pc). These observations in combination with the radio polarimetric observations have been able to trace the magnetic fields in the multi-phase interstellar medium in the starburst ring of NGC 1097. This work shows that the magnetic fields control the transfer of matter from the starburst ring towards the active galactic nucleus and played a fundamental role in the evolution of NGC 1097. The SOFIA Legacy Program on Extragalactic Magnetism (SALSA) provides a larger sample of galaxies to test whether these results are general or applicable only to the galaxies with the strongest magnetic field. [Read more.](#)



Magnetic field streamlines from the Effelsberg radio telescope superposed on an image of the central 1 kpc starburst ring of the spiral galaxy NGC 1097 obtained with the NACO adaptive optics on the VLT. Gas streams follow the magnetic field, feeding the super massive black hole with matter from the galaxy. The image was constructed by stacking J- (blue), H- (green), and Ks-band (red) images. (NASA, the SOFIA science team, E. Lopez-Rodriguez et al.; ESO/Prieto et al.)

## Call for Proposals

### SOFIA Archival Research Program Call for Proposals

SOFIA is pleased to invite proposals for the [SOFIA Archival Research Program](#) (SARP), aimed at encouraging the use of SOFIA archival observations for impactful science.

This program will fund archival research projects primarily using SOFIA data to encourage

the use of available SOFIA archival data. Two distinct types of proposals for the archival research program are solicited in this round:

- Regular Proposals - Large programs requesting up to \$175,000 per year, or more in exceptional cases, and lasting up to two years
- Small Proposals - Targeted programs requesting up to \$50,000 - \$75,000 and lasting for one year

This call is open to all qualified astronomers affiliated with a U.S. institution, and complements the Astrophysics Data Analysis Program (ADAP) under the NASA Research Opportunities in Space and Earth Sciences (ROSES) solicitation.

Early career researchers, including graduate students and postdocs, are encouraged to apply to the small proposals category.

**Proposals are due July 8, 2022.** [Learn more about the Archival Research Program on the science center website.](#)

As a NASA sponsored funding call, the SARP is open only to U.S. institutions. Access to the SOFIA Science Archive is freely available and not limited to those eligible to apply for this funding.

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## DDT Observing Proposals

Proposals for [Director's Discretionary Time \(DDT\)](#) for observing projects continue to be welcome at any time. To request a DDT observation on SOFIA, therefore please simply generate and submit a proposal via the [USPOT tool](#) (as for regular Cycle proposals). Because DDT projects usually address time-critical phenomena that are of high interest to the community, there will generally not be any exclusive use period where the data can only be accessed by the proposing team. Note that funding is not granted for most DDT programs. Eligible PIs of DDT programs that receive data can apply to the [archival research program](#).

# Featured Legacy Dataset

## Survey on extragalactic magnetism with SOFIA (SALSA)

Survey on extragalactic magnetism with SOFIA (SALSA), also known as galmagfields, is a [SOFIA Legacy Program](#) led by Enrique Lopez-Rodriguez (Stanford). It aims to better understand the strength and structure of magnetic fields within the multi-phase ISM of galaxies. The program leverages observations in the optical, IR, Submm, and radio and combines them with new polarization data from HAWC+ to study the delicate interplay between gravity, turbulence, feedback, and magnetic fields.

The program, which is currently underway and is about halfway to completion, has already provided a range of publicly available processed images, temperature maps, column density maps, CO and HI maps, and polarization maps in multiple galaxies. The team has also provided polarization and moment maps of other datasets from *Herschel*, ALMA, IRAM-30m, and the VLA. Data products and the codes used to create them are being released by the team as the data are published, with five publications/galaxies already completed (Centaurus A, M51, M82, NGC 253, NGC 1068). These results will have profound implications on our understanding of galaxy formation, and the global magnetic fields of galaxies.

The processed maps and archival datasets can be found on the [team website](#). All SOFIA data is public and can be found on the [IRSA archive](#). The [first data release publication](#) has been submitted to ApJ.

## Southern Deployment to New Zealand

It has been almost three years since the last deployment to New Zealand, and the SOFIA Team is proud to announce that this Summer the observatory is returning to its alternate base in Christchurch for a long Southern deployment. Observing from New Zealand allows SOFIA to study astronomical objects and events that often can only be seen from the Southern Hemisphere. Two science instruments will deploy with the focus of completing [ongoing Legacy Programs](#). More news about the deployment will be announced on the [SOFIA blog](#). See the [latest schedule plans](#).

## Virtual Talks

### Join Science Talks Remotely: Tele-Talks

**Tele-Talks** are scientific presentations given via phone, with slides distributed ahead of time. The talks are held approximately twice a month on Wednesdays at 9:00 am Pacific, noon Eastern. For information on how to participate, check the [SOFIA Tele-Talk webpage](#).

#### Upcoming Tele-Talks

- May 11: Arshia Jacob (Johns Hopkins University); HyGAL: Characterizing the Galactic ISM with Observations of Hydrides and Other Small Molecules
- May 25: Niko Zielinski (University of Kiel); Magnetic Field Structure in OMC-3
- June 1: Ian Stephens (Worcester State University and Harvard CfA); Magnetic Field in the Filamentary Bone G47
- June 22: Slawa Kabanovic (University of Cologne); [CII] Self-Absorption in RCW120
- July 6: José Pablo Fonfría (Instituto de Física Fundamental, CSIC); S(1) Line of H<sub>2</sub> in AGB Stars
- July 20: Ümit Kavak (SOFIA Science Center); Protostellar Feedback in Orion's Veil

[See full list of Tele-Talks.](#)

Please direct questions and comments to the SOFIA Science Center help desk:  
[sofia\\_help@sofia.usra.edu](mailto:sofia_help@sofia.usra.edu).

