



Cycle 7 Calls for Proposals

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SOFIA Workshop



Cycle 7 Calls for Proposals

2-4 May 2018





Cycle 7 Timeline*



* Not yet officially approved by NASA

- Release of Call for Proposals 1 Jun 2018
- Call for Proposals Update on Website 2 Jul 2018
- Proposals Due 7 Sep 2018 21:00 PDT
8 Sep 2018 04:00 UTC
- Announcement of Selections Nov 2017
- Cycle 7 begin 15 Apr 2019
end 27 Mar 2020

The information given in this presentation may change.
The official calls for proposals are located at:

<https://www.sofia.usra.edu/Science/proposals/Cycle7/>







Who can apply?



- The Cycle 7 Call is open to all qualified astronomers, in the U.S. and outside the U.S., except for those currently affiliated with German institutions.
- Astronomers with a German professional affiliation must participate through a separate German Call for Proposals
 - Call administered by the German SOFIA Institute (Deutsches SOFIA Institut; DSI) on behalf of the German Aerospace Center (Deutsches Zentrum für Luft und Raumfahrt; DLR).



New Policies and Capabilities for Cycle 7



- Starting in cycle 7, a new proposal category, “SOFIA Legacy Programs” (SLP), is introduced.
 - The SLP category is intended to enable large, coherent programs aimed at generating results of general and significant interest to the astronomical community, including the development and implementation of software and theoretical/analysis tools.
 - SLPs are also expected to generate substantial archival data sets.
 - Significant funding is available for participation of US-based scientists in the associated Science Teams.
- Proposals for SLPs, are solicited in a separate parallel Call for Proposals.





New Policies and Capabilities for Cycle 7



- The “Impact Proposal” category has been retired, in favor of the SOFIA Legacy Programs.
- The near-infrared camera and grating spectrometer FLITECAM and the High-speed Imaging Photometer for Occultation (HIPO) have been retired and are not offered for observations in Cycle 7 or future calls (including through DDT requests).
 - High-speed visual photometry is still possible on SOFIA using the Focal Plane Imager Plus (FPI+).
- The multi-receiver 4GREAT system is offered in all 4 bands and frequency settings. Bands 1 & 2 are offered as shared risk.



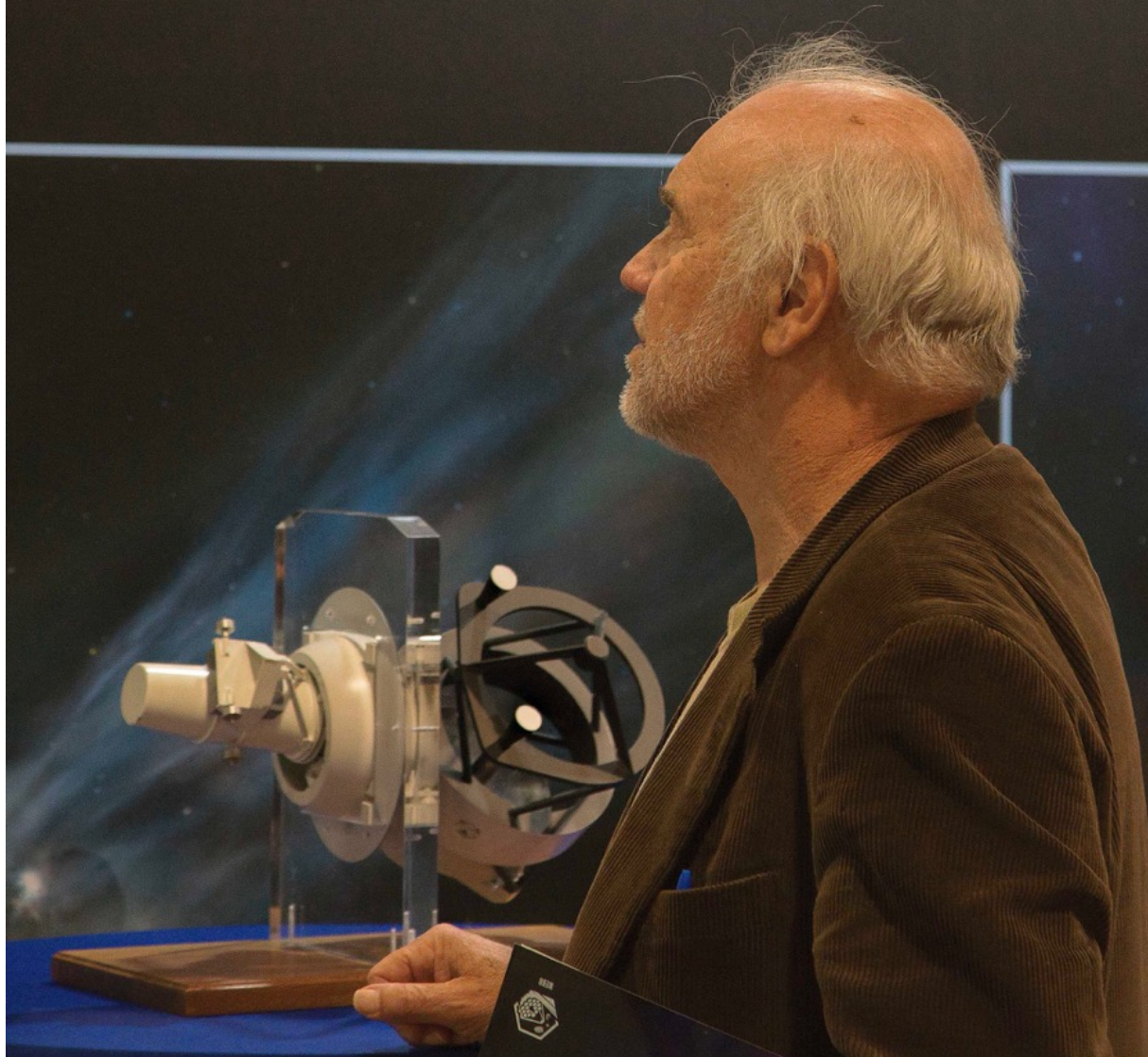


New Policies and Capabilities for Cycle 7



- The 63 μ m filter of HAWC+ is not offered in Cycle 7.
- A Southern Deployment is planned in Cycle 7 and is expected to be made up of two science flight series with separate science instruments.
- ~400 hours are offered for the non-German community in this Call. ~70 hours for the German community.
- **Proposers are reminded to check the SOFIA website for a formal update to the Call for Proposals provided on July 2, 2018 that incorporates any late changes in the Observatory offerings.**

the Far Infrared Univers



Observations of ρ Oph A
Santos, Falicki P., et al, in prep
Instrument: HAWC+

Background
The gravitational contraction of molecular clouds that lead to the formation of stars and planets is likely regulated by magnetic fields. In order to interpret magnetic field maps from interstellar polarization measurements, the physical mechanisms that allow dust grain particles to be aligned must be well understood.

The ρ Ophiuchi molecular complex, known as ρ Oph A, is one of the closest star-forming regions to the Sun (14°120 pc) and hosts several protostars at different evolutionary stages.

The massive star ρ Oph S1 is the main source of heat and radiation. ρ Oph A was mapped using HAWC+ at 89 μ m and 150 μ m to calculate the slope of the interstellar polarization spectrum $\beta(\lambda)$.

SOFA



Instruments Offered in Cycle 7



Instrument	Description	Coverage
EXES (Echelon-Cross- Echelle Spectrograph)	High Resolution ($R > 10^5$) Echelle Spectrometer	5 – 28 μm
FIFI-LS (Field Imaging Far-Infrared Line Spectrometer)	Dual Channel Integral Field Grating Spectrometer	51 – 120 μm 115 – 203 μm
FORCAST (Faint Object infraRed CAmera for the SOFIA Telescope)	Mid-IR Dual Channel Imaging Grism Spectroscopy	5 – 25 μm 25 – 40 μm
FPI+ (Focal Plane Imager Plus)	Visible light high speed camera	360 – 1100 nm
GREAT, upGREAT (German REceiver for Astronomy at Terahertz frequencies)	High resolution ($R > 10^6$) heterodyne spectrometer; multi-pixel spectrometer	0.49-0.635 THz 0.890-1.100 THz 1.24-1.39, 1.43-1.5 THz 1.83 – 2.006 THz 2.49-2.59 THz 4.74 THz
HAWC+ (High-resolution Airborne Wideband Camera-Plus)	Far-Infrared camera and polarimeter	Four $\sim 20\%$ bands at 53, 89, 154, & 214 μm .





Types of Programs



- Three types of programs are solicited in response to this Call: Regular Programs, Survey Programs, and Target of Opportunity Programs.
- A single proposal may not mix these three different program types.
- Proposers of Regular Programs and Survey Programs can also request status as a *Thesis Enabling* Program.
 - For U.S.-based proposers, additional funding (for 2 years) will be made available
 - If not selected as a Thesis Enabling Program, then these proposals revert back to their original designation and can still be selected as a Regular Program or a Survey Program.





AAS Press Conference January 2018



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Proposals are accepted in 3 priority bands



- **Priority 1** – *Priority 1* (“will do”) proposals are the highest ranked category of proposals.
 - They will strongly drive the scheduling and thus have a high likelihood of completion within Cycle 7.
 - If for technical reasons they cannot be completed within Cycle 7, then *Priority 1* proposals will be carried over into Cycle 8.
 - Full funding for US Priority 1 proposals will be released at the time of acceptance.
 - It is expected that about 25% of the available observing time will be accepted into this category.



AAS SOFIA Information Booth (January 2018)



Observatory for Infrared Astronomy
Infrared Universe with SOFIA



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Proposals are accepted in 3 priority bands



- **Priority 2** – *Priority 2* (“should do”) proposals are likely to be completed within Cycle 7
 - The uncertainties of scheduling precludes releasing full funding before the first proposed observations have been started.
 - *Priority 2* proposals will not be carried over into the next cycle if incomplete.
 - It is expected that about 50% of the available observing time will be accepted into this category.
 - It is strongly recommended to re-propose those Cycle 6 priority 2 programs that have not yet been observed at the time of the due date for Cycle 7 proposals.





Proposals are accepted in 3 priority bands



- **Priority 3** – *Priority 3* (“do if time”) proposals will be added to Flight Plans when no higher ranked targets are available. Used as “fillers”
 - Funding for US-led *Priority 3* proposals will be released incrementally as observations are executed.
 - It is expected that about 50% of the available observing time will be accepted into this category.
 - It is strongly recommended to re-propose those Cycle 6 priority 3 programs that have not yet been observed at the time of the due date for Cycle 7 proposals.





Regular Programs



- Observations of specific targets with known positions and timing constraints (including targets with no constraints) will constitute regular observing programs.
 - This includes also time critical observations and observations of known Solar System objects.
- The intent is to execute all the highly ranked observations accepted in a regular program.
 - By necessity, efficient scheduling of SOFIA requires a larger pool of candidate observations in a given Cycle.
 - The SMO director will accept regular proposals as “Priority 3” over and above the maximum available ~400 hours.
 - Such programs will be scheduled at lower priority than those accepted as “Priority 1” or “Priority 2”, but with the intent to execute as large a fraction of the observations as possible.





Survey Programs



- The Survey proposal category are intended to allow studies of a target class, as well as provide the SOFIA program flexibility in flight planning.
 - These programs should identify a sample of targets and observations with a common scientific justification.
 - The selection of survey proposals will be primarily judged on scientific merit, but samples with uniform sky distributions will be prioritized as they provide the best flexibility in flight planning.
- The intent is that a useful fraction of the targets in a given survey program will be observed, but with no specific target observation guaranteed to be executed.
 - The proposal should discuss and justify a scientifically useful sample size for completion.
 - The proposer should specify how many objects of this pool need to be observed to provide a scientifically useful result.





Target of Opportunity Programs



- Target of Opportunity (ToO) proposals are...
 - Programs with known targets, but unknown timing of the observations, such as observations of a specific target at an unknown time (e.g. an identified recurrent nova in outburst)
 - Programs targeting a class of astronomical events, but with unknown targets and timings (such as observations of an as yet unidentified comet or supernova).
- For ToO observations, the proposal should contain a discussion of the triggering criteria, the required turn-around time between triggering and observation, and any other timing constraints.
 - Since SOFIA can only observe with a single instrument at the time, rapid turn-around ToO requests with a specific instrument may be difficult to implement.
 - Hence, ToO proposals should also address the viability and utility of observing the event/target with each of the available SOFIA instruments.
- The SMO Director will have ultimate authority in recommending or rejecting the request that a selected ToO program be activated.



Thesis Enabling Programs



- Thesis enabling programs are aimed at enhancing the support for and execution of doctoral theses based, in a substantial part, on SOFIA observations.
 - Proposals with this attribute require a well-defined thesis program and an identified student.
 - The PI at a U.S. institution (nominally the thesis advisor) can request up to two years of graduate student funding at the standard rate at the host university (capped at \$100k per year).
 - These programs will have their first year's funding released at proposal acceptance. The second year's funding will be released one year later, after submission of a status report to the SMO Director, demonstrating progress in the thesis project.





Proposal Preparation and Submission



- Each Cycle 7 proposal must be prepared using the SOFIA USPOT tool:

<https://dcs.sofia.usra.edu/observationPlanning/installUSPOT/uspotDownload.jsp>

- Estimates of exposure times for imaging with FORCAST, FPI+, and HAWC+ can be made using the SOFIA Instrument Time Estimator (SITE), a web-based tool

<https://dcs.sofia.usra.edu/proposalDevelopment/SITE>

- Stand-alone Exposure Time Calculator (ETC) tools for the FORCAST grism mode and for EXES, FIFI-LS and GREAT observations are also available on the SOFIA website



Page Limits



- Scientific Context (up to **0.5 pages**) – Briefly summarize the proposed investigation
- Scientific Justification (up to **3 pages**)
- Feasibility (up to **2.5 pages**)
- Principal Investigator and Co-Investigator Biographical and Publication Data (**1 page** for the PI and **1 page** for **all** Co-Is)
- For *Thesis Enabling Programs*, **1 page** should be included to describe the thesis project, including the expected role of SOFIA data and an estimated timeline.
 - A short biographical sketch for the identified student should be included, if not already included as a Co-I.



Call for Legacy Science Proposals



- Timeline for SOFIA Legacy Program's (SLP) Call for proposals (CfP) is identical to regular GO Call for Proposals with one exception.
 - Time period for SLP CfP is for both Cycle 7 and Cycle 8.
- Instruments offered for this SLP CfP are identical to the regular GO CfP with one exception
 - HIRMES is scheduled to be commissioned during Cycle 7
 - Use of HIRMES during Cycle 8 can be proposed
 - Because reliable sensitivity data for HIRMES are unavailable, on-target integration times for this instrument are considered approximations only
 - specifics for HIRMES observations will be revisited and reviewed by the SMO after commissioning, before being implemented.





Other Differences between the Regular GO CFP and the SLP CFP



- A total of approx. 100 hours for two years is being offered in the SLP CFP
- It is likely that only two SLP proposals will be accepted
 - Because the approx. 50 hours per SLP project during Cycle 7 will be taken solely from the NASA allocation, the participation of scientists from German institutions *as PI* is uncertain
- **There is no “exclusive use” period of SLP data.**
 - Level 3 SLP data will be released to the public on a rolling basis as it becomes available
 - Higher level products produced by the SLP team will also be made public as soon as they become available
- SLP teams will presumably be larger than regular GO teams





Other Differences between the Regular GO CfP and the SLP CfP



- A \$-budget for participants from U.S. institutions must be included in the SLP proposal
 - If the SLP PI is from a U.S. institution, then this PI is responsible for distributing funds to other U.S.-based Co-Is
 - If the SLP PI is from a non-U.S. institution, then a Lead U.S. Co-I must be named to distribute funds to other U.S.-based Co-Is
 - \$-funding for first year will be available soon after selection (similar to successful Priority 1 GO proposals)
- Enhanced data products and/or tools are expected to result from successful SLP programs
- Page limits are different in the two CfPs



Page Limits for SLP Proposals



- Scientific Context (up to **1 page**) – Briefly summarize the proposed investigation
- Scientific Justification (up to **5 pages**)
- Feasibility (up to **3 pages**)
- Principal Investigator and Co-Investigator Biographical and Publication Data (**1 page** for the PI and **1 page** for **all** Co-Is)
- Budget (SMO-provided budget form + up to **2 pages** budget narrative)
- PI and Co-I biographical and publication data (**1 page** for the PI with **1/2 page** per Co-I).





Deployments



- The SOFIA Program expects to conduct a single ***Southern Hemisphere*** deployment with two science instruments during Cycle 7.
 - The deployment flights will be executed out of Christchurch (New Zealand) during part of the June-August 2019 period.
 - The over-all scientific justification for the observations proposed will be a key determinant in which instruments are selected for deployment.
- The SOFIA program is studying the option of performing shorter-duration, single instrument deployments...
 - to support science observation of southern targets not available during the boreal summer deployment, or
 - for other location critical observations, not possible for flights out of Palmdale.
 - Note that such “Suitcase Deployments” have a higher execution risk. Observations requiring Suitcase Deployments should be highlighted in the Feasibility section of the proposal.





Director's Discretionary Time



In addition to the above proposal types, the SOFIA program accepts proposals for Director's Discretionary Time programs.

- This category is intended for short, urgent observations that could not have been foreseen at the time of the proposal Call and that cannot wait for the next proposal cycle.
- In exceptional cases, proof-of-concept observations may be requested through the DDT path. However, a strong justification for not proposing such observations through the regular proposal process will be required.
- A few well-justified HIRMES observations may be accepted via the DDT path prior to its offering in Cycle 8, but the proposal team's capability of how to deal with HIRMES' raw data needs to be documented.
- **DDT proposals can be submitted at any time.** They should be directly addressed to the SMO Director, Dr. Harold Yorke.

<https://www.sofia.usra.edu/science/proposing-and-observing/proposal-calls/sofia-directors-discretionary-time>





Proposal Resources available for Downloading



- Calls for Proposals (CfPs)
 - Written version of this talk, will appear on the SOFIA website on June 1, 2018; use this to prepare proposals
 - The CfPs will be updated on July 2, 2018! These are the final official versions of the Calls
- Unified SOFIA Proposal and Observation Tool (USPOT)
 - Look and feel of SPOT and HSPOT with SOFIA-specific features
 - Used for proposal submission (Phase I) and observation planning (Phase II)
- Target Visibility Tool (VT)
 - Determines when target is above the horizon from any location on Earth (default location is Palmdale, CA)
 - Use target coordinates or name





Proposal Resources available for Downloading or Web-based online



- Observer's Handbook
 - Detailed technical information about the instrument
 - Some technical details may be updated July 2
- Exposure Time Estimation Calculators (ETC)
 - Standalone tools available for EXES, FIFI-LS, FORCAST-grism and GREAT observations
 - SITE: web-based tool available for FORCAST imaging, FPI+ and HAWC+
- Atmospheric Transmission (ATRAN)
 - Online tool to calculate the atmospheric transmission
 - Uses “standard atmosphere” model

<https://www.sofia.usra.edu/researchers/proposing-and-observing/proposal-resources>





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Proposal Resources

Proposal Documents

Cycle-Independent Documentation

[Quick Guide](#)

[Tech Flyer](#)

Cycle 6 Documentation

[Call for Proposals](#)
[Observer's Handbook](#)
[USPOT Manual](#)

Cycle 5 Documentation

[Call for Proposals](#)
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<http://www.sofia.usra.edu>

