

SOFIA Instrument Roadmap

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Instrument Roadmap

- The HIRMES instrument project has been canceled by NASA.
- HIRMES detector development may continue under separate funding.
- The SMO has been charged by NASA to develop an Instrument Roadmap for the next 5-10 years.
- The Roadmap should solicit guidance from the community.

SOFIA may consider

- Upgrades to existing instruments
 - Relatively un-invasive ones (like the HAWC+ detectors, or FPI++)
 - More substantial ones (like FIFI+LS)
- New instruments
- A HIRMES-like instrument, if detector development is successful.

Roadmap Development Plan

- Two Workshops to gather community input and buy-in:
 - June 22 to 24: Science Survey and Cases
 - July 27 to 29: Instrument Concepts, Feasibilities
- Based on the inputs from the Workshops, the SMO will develop a Road Map proposal to NASA
 - Internal review by SMO staff
 - External review by “Red Team”
- Delivery date: 1 September 2020

Workshops

- Workshop 1 – Survey of Science Cases
 - Three half-days (7am-noon) June 22-24
 - All invited talks with significant discussion each day
- Workshop 2 – Instrument Concepts, Feasibility
 - In development
 - Three half-days (7am-noon) July 27-29
 - Invited and contributed talks
 - Invited from known concepts
 - Solicit contributed talks on other concepts
 - SMO available to produce initial level feasibility checks
 - Talks on relevant detector technology (e.g. MKIDS) and Software

Post-Workshops

- Summarize and evaluate outcome of workshops
- Evaluate feasibility of concepts (1st order)
- Write and review Roadmap proposal
- Delivery: Sept 1. (Nominal)

Considerations

- Next major review (Senior Review or Flagship Mission Review) in ~2 years
 - Need to show “something new”, either promise or science result
- HIRMES science case was a centerpiece of the Flagship Mission Review proposal.
- HIRMES detector development may continue under separate funding envelope (team has been invited to submit and out-of-cycle SAT proposal).
- Several instrument proposals were developed under a previous Call, but did not proceed due to budgetary limitations. Well-developed concepts are in place.

A Strawman Plan

- Phase 1: Start something quickly in time for next review, possibly an upgrade with shorter timeline than a full-blown instrument development. Fund with current FY \$. (2020-2021)
- Phase 2: Start a new instrument or major upgrade. (2021-2025)
- Phase 3: Start another new instrument, possibly a return of HIRMES if detector development is successfully completed. (2025 – 2029)

We seek your advice

- What is the best science that SOFIA can do?
- What are the gaps in SOFIA's capability to perform impactful science?
- What is the best forward to develop a compelling suite of instruments for SOFIA?