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?