

SOFIA SI Development Status

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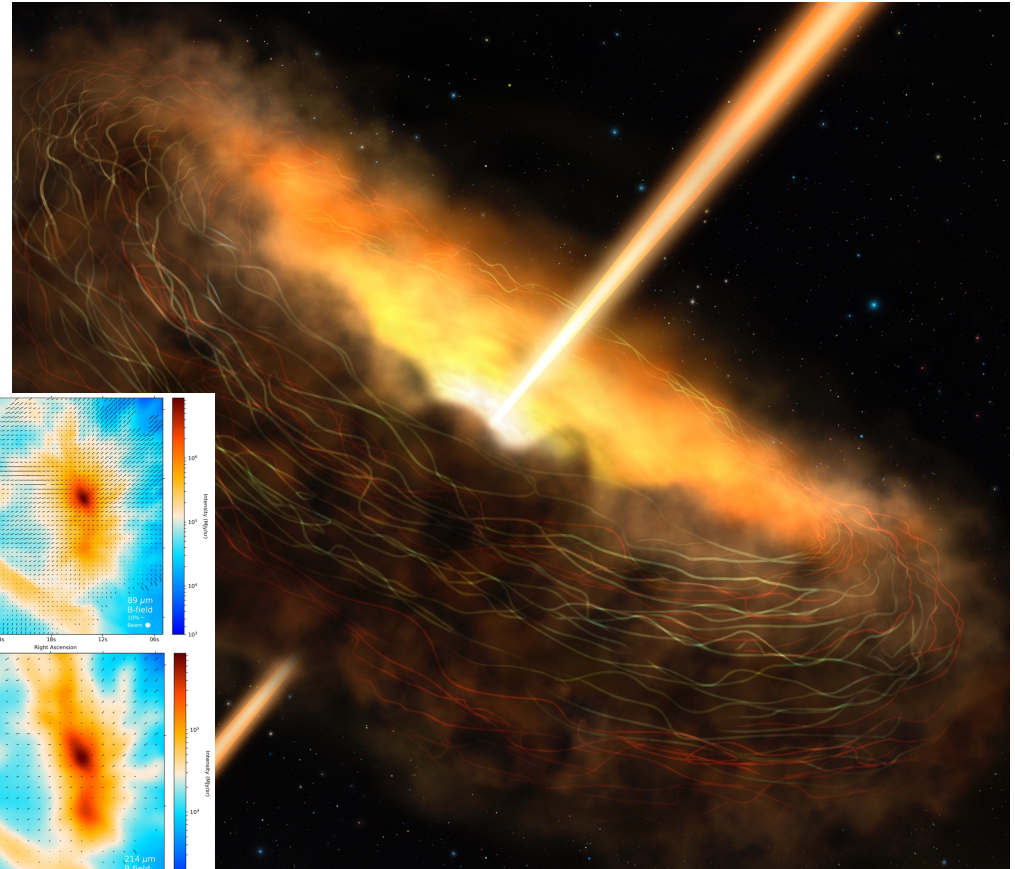
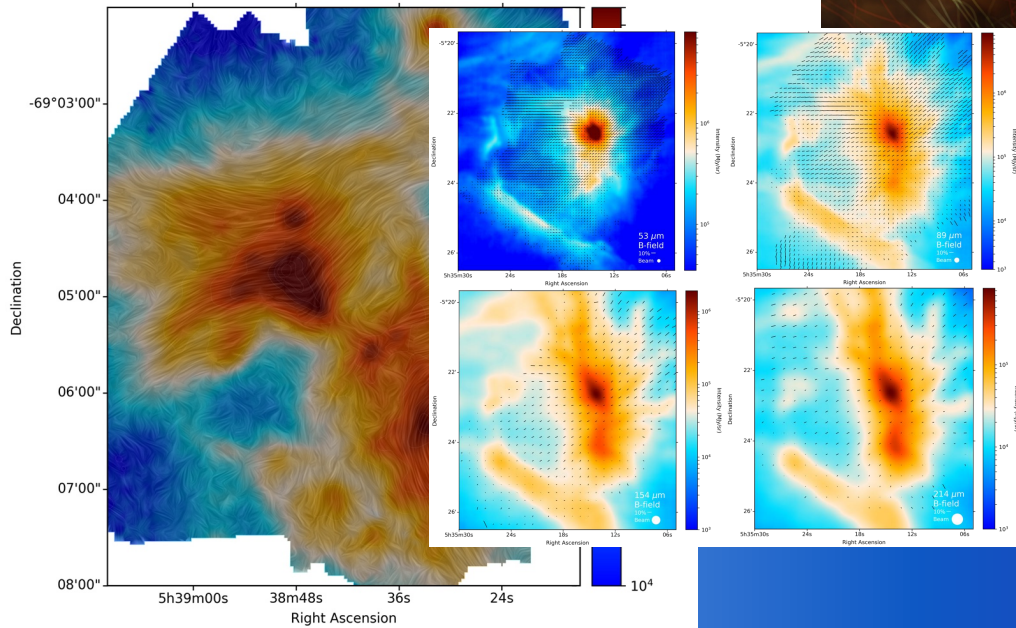
NASA Ames Research Center

Outline

- HAWC+
- HIRMES
- Next Generation Science Instrument (NGSI)

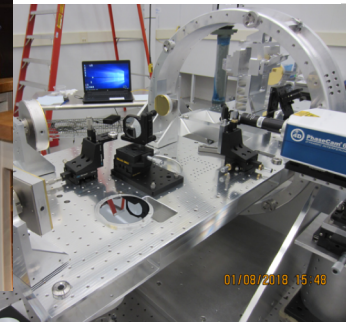
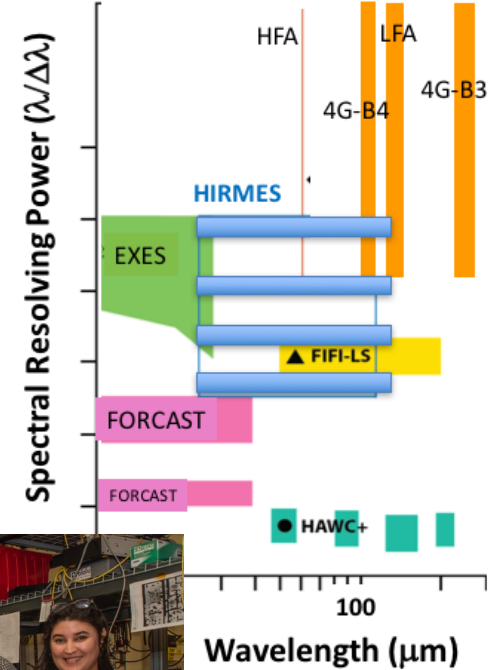
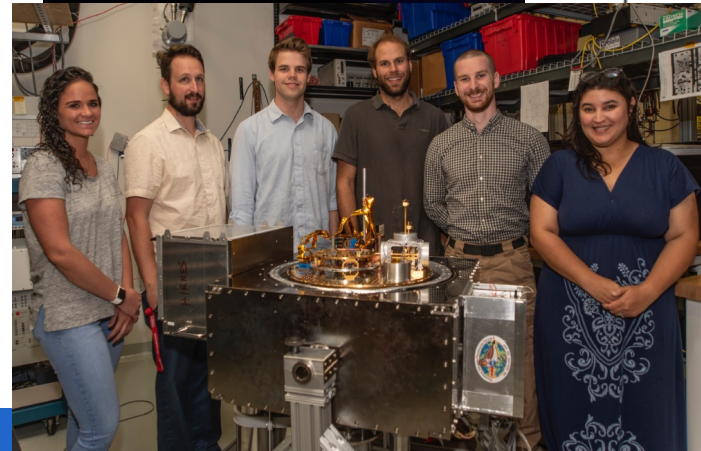
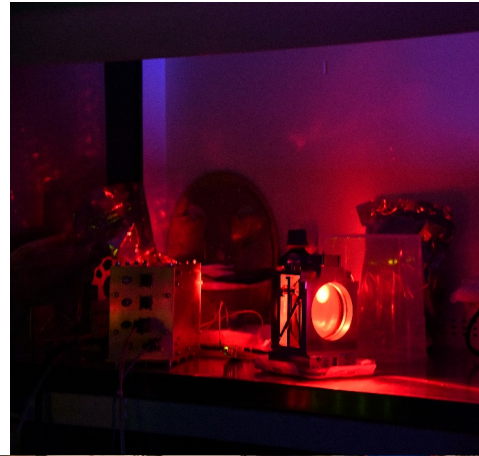
High-resolution Airborne Wideband Camera plus Polarimeter (HAWC+)

- Formally accepted as SOFIA Facility-class science instrument
- Completed first deployment to New Zealand
- Employing lessons learned from this effort



High Resolution Mid-infrared Spectrometer (HIRMES)

- 25- 122 μm with four spectroscopic modes
 - High-res mode $R \sim 100,000$
 - Mid-res mode $R \sim 10,000$
 - Low-res mode $R \sim 300-600$
 - Imaging spectroscopy mode $R \sim 2000$
- Background limited bolometers
- Fabry-Perot Interferometers and gratings
- Integration and Test underway at GSFC
- HQ led team performing a cost and schedule review of HIRMES



Philosophy of Solicitation

- **Science Leads the Way**

- Selected team(s) must execute and deliver well-defined Legacy Science Program(s)
- Prioritize instruments that enable broad community usage and/or data of high archival value, but also allow for agile, “niche” instruments to solve important / outstanding science questions

- **Technology to Meet the Needs of Science**

- Solicitation allows for:
 - new instruments
 - upgrades/modifications to existing instruments
- Allow for flexibility for future enhancements and modifications to NGSII

- **Flexibility to Propose What The Science Needs**

- Allow for a nominal three-year development period after funding begins but also allow for longer or shorter development timescales for optimal science return
- Allow for schedule and budget flexibility; make selections based on science return on investment
- Reduce requirements for the Instrument Concept Study (ICS) phase compared to previous solicitations
- Make instrument development and acceptance process easier for teams (using lessons learned from past experience)

Next Gen Science Instrument (SI) Details

• Three Phases

–Phase 1

- 25 Pages
- Focus on the science
- Propose whatever the science needs
- Help us understand this idea is possible
- Due: 1 AUG 2018

–Phase 2

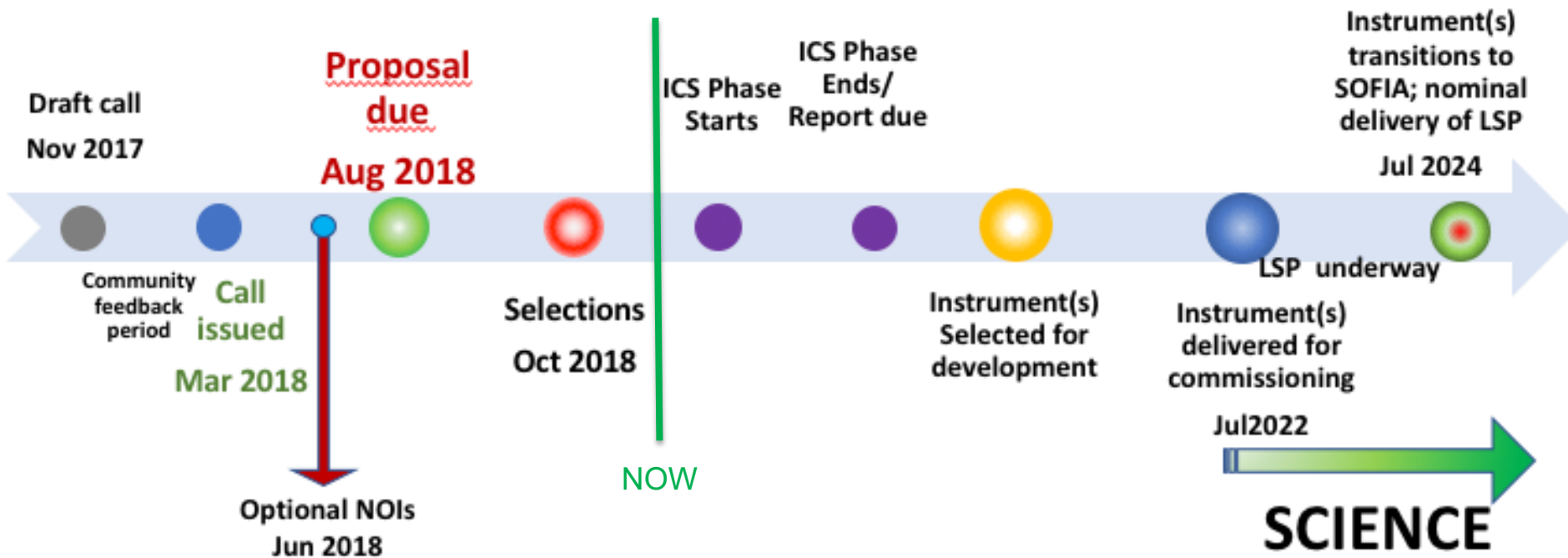
- Pull together the team
- Develop the detailed plan
- Where are we going to explore?
- Resources become available

–Phase 3

- Carry out the plan from Phase 2

Timeline

Fig 1 (revised): TIMELINE FOR SOFIA'S NEXT GENERATION INSTRUMENTATION



NGSI Update

- Selection committee met and provided recommendations
- Current status has been provided to all proposers (not selected or selected but deferred)
- Work underway with selected teams to determine path forward

- SI Dev Updates
 - **Updated streamlined and optimized requirement set negotiated between Chief Engineer's Offices and S&MA Offices at both ARC and AFRC – signed and released**
 - Templates and synopses of all SOFIA requirements completed and released
 - Lessons learned being employed prior to any development
 - Will employ HIRMES model of deployed instrument scientist and instrument ops support