The Stratospheric Observatory for Infrared Astronomy (SOFIA)

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Abstract— **The Stratospheric Observatory for Infrared Astronomy (SOFIA) is a 2.5-meter infrared airborne telescope in a Boeing 747SP that operates in the stratosphere at altitudes as high as 45,000 feet (14 km). A joint project of NASA and the German Aerospace Center (DLR), SOFIA can conduct photometric, spectroscopic, and imaging observations at wavelengths from 0.3 μm to 1.6 mm (0.2 – 1000 THz) with an average atmospheric transmission greater than 80 percent across that range. The first- and second-generation instruments span the range from 0.3 to 240 μm (1.3 – 1000 THz) and utilize detector technologies including impurity band conduction (InSb, SiAs, SiSb), GeGa arrays, superconducting bolometers, and SIS junctions. Here we highlight the capabilities of this current instrument suite. SOFIA's ability to regularly update its instrument complement over its 20-year lifetime will allow for the incorporation of new state-of-the-art technologies in an effort to increase sensitivity and explore as yet unasked astrophysical questions. NASA plans to solicit proposals for new, 3rd-generation instruments in calendar year 2015 (solicitation number NNH15ZDA007J).**

ACKNOWLEDGMENT

SOFIA is a joint effort by many people from the German Aerospace Agency (DLR), the German SOFIA Institute (DSI), the Universities Space Research Association (USRA), and U.S. civil servants and contractors at NASA Ames Research Center and the NASA Armstrong Flight Research Center.

REFERENCES

[1] Miles, J. W., et al, "Capabilities, performance, and status of the SOFIA science instrument suite", in *Proc. SPIE 8867, Infrared Remote Sensing and Instrumentation XXI*, eds. M. S. Scholl & G. Pàez, p. 88670N, 2013.

[2] Smith, E. C., et al., "SOFIA science instruments: commissioning, upgrades and future opportunities", in *Proc. SPIE 9147, Ground-based and Airborne Instrumentation for Astronomy V*, eds. S. K. Ramsay, I. S. McLean, & H. Takami, p. 914706, 2014.

[3] Temi, P., et al., "The SOFIA Observatory at the Start of Routine Science Operations: Mission Capabilities and Performance", *ApJS*, 212, p. 24, 2014.

[4] Young, E. T., et al., "Early Science with SOFIA, the Stratospheric Observatory For Infrared Astronomy", ApJ, 749, p. L17, 2012.