US Instrument Options for the SPICA Observatory

NASA has engaged in studying options for a US contribution to the Japanese-led Space Infra-Red Telescope for Cosmology and Astrophysics (SPICA). This cryogenic 3m-class telescope builds on the scientific and technological legacies of Akari and Herschel. The primary portion of a US contribution would be a far-infrared spectrometer, but with a sensitivity several hundred times greater than Herschel, opening up this wavelength range for study of emission lines from galaxies up to the highest redshifts. We describe efforts to formulate an approach that fits within project and programmatic constraints and fulfills the scientific promise of the SPICA observatory.

NASA has engaged in studying options for a US contribution to the Japanese-led Space Infra-Red Telescope for Cosmology and Astrophysics (SPICA). This cryogenic 3m-class mid-to-far-infrared telescope provides a natural successor platform to the successful Akari and Herschel missions, building on both a scientific and technological legacy. The primary portion of a US contribution would be a far-infrared high sensitivity spectrometer covering approximately the wavelength range of the Herschel instrument suite. On a cryogenic telescope, the line sensitivity would be several hundred times greater, opening up this wavelength range for study at an unprecedented level and detecting emission lines from galaxies at the highest redshifts. The accommodation available for a US instrument is tightly constrained, putting stringent limits on the design. We describe current efforts to formulate an approach that fits within project and programmatic constraints and fulfills the scientific promise of the SPICA observatory.

Biography:

Dr. Benford received the Ph.D. in Astrophysics from Caltech in research on the development and use of bolometer instruments for detecting distant galaxies. He has been at NASA's Goddard Space Flight Center in Greenbelt, Maryland since 1999. He has pursued research in far-infrared bolometric detectors, long wavelength observations of star forming regions and ultraluminous galaxies, and cryogenic instrumentation for space observatories. His primary research focus is in observational extragalactic astronomy and cosmology and developing ultrasensitive instruments for far-infrared and submillimeter astronomy. He is currently the Chief Scientist of NASA's Cosmic Origins Program Office and the Deputy Mission Scientist for the Wide-Field Infrared Survey Explorer (WISE).

Additional Authors:
Carter
Primary Author:
Benford, Dominic NASA Goddard Space Flight Ctr. United States dominic.benford@nasa.gov

Co-Authors:
Carter, Ruth NASA Goddard Space Flight Ctr. United States ruth.c.carter@nasa.gov
Benner, Steve NASA Goddard Space Flight Ctr. United States steve.m.benner@nasa.gov
Rossetti, Dino NASA Goddard Space Flight Ctr. United States dino.j.rossetti@nasa.gov
Leete, Stephen NASA Goddard Space Flight Ctr. United States stephen.leete@nasa.gov
Townsend, Jackie NASA Goddard Space Flight Ctr. United States jacqueline.a.townsend@nasa.gov
Keer, Beth NASA Goddard Space Flight Ctr. United States beth.a.keer@nasa.gov
Davis, Chris NASA / HQ United States christopher.j.davis@nasa.gov

Contact Author:
Benford, Dominic NASA Goddard Space Flight Ctr. United States dominic.benford@nasa.gov

Abstract Text for Online or Printed Programs:
NASA has engaged in studying options for a US contribution to the Japanese-led Space Infrared Astrophysics (SPIA). This cryogenic 3m-class telescope builds on a successful Akari and Herschel missions, building on both a scientific and technological legacy. The primary portion of a US contribution would be a far-infrared spectrometer, but with a greater than Herschel, opening up this wavelength range for study of emission lines from the line of the SPICA observatory.

Abstract Text for Technical Review Purposes:
NASA has engaged in studying options for a US contribution to the Japanese-led Space Infrared Astrophysics (SPIA). This cryogenic 3m-class mid-to-far-infrared telescope provides a far-infrared high sensitivity spectrometer covering approximately 100 instrument suite. On a cryogenic telescope, the line sensitivity would be several hundred wavelength range for study at an unprecedented level and detecting emission lines from...
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