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Fourier transform spectroscopy for future planetary missions JOHN BRASUNAS, JOHN KOLASINSKI, TED KOSTIUK, NASA/GSFC, TILAK HEWAGAMA, University of Maryland, College Park — Thermal-emission infrared spectroscopy is a powerful tool for exploring the composition, temperature structure, and dynamics of planetary atmospheres; and the temperature of solid surfaces. A host of Fourier transform spectrometers (FTS) such as Mariner IRIS, Voyager IRIS, and Cassini CIRS from NASA Goddard have made and continue to make important new discoveries throughout the solar system. Future FTS instruments will have to be more sensitive (when we concentrate on the colder, outer reaches of the solar system), and less massive and less power-hungry as we cope with decreasing resource allotments for future planetary science instruments. With this in mind, we have developed CIRS-lite, a smaller version of the CIRS FTS for future planetary missions. We discuss the roadmap for making CIRS-lite a viable candidate for future planetary missions, including the recent increased emphasis on ocean worlds (Europa, Encelatus, Titan) and also on smaller payloads such as CubeSats and SmallSats.

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