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Title:Early science results from the heterodyne instrument for the far infrared (HIFI) on the herschel space observatory

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Abstract:The Heterodyne Instrument for the Far Infrared (HIFI) on the Herschel Space Observatory covers 480 to 1250 GHz and 1410 to 1910 GHz for high spectral resolution astronomical spectroscopy. Herschel was launched on 14 May 2009, and following cooldown and commissioning, HIFI has been used along with the other two focal plane instruments for a wide variety of astronomical observations. These have ranged from studies of the structure of the interstellar medium in nearby galaxies to detailed studies of the chemistry in star-forming regions of the Milky Way. Observations of the solar system have yielded new results about water in comets and its relationship to the Earth's oceans. In this paper, following a brief review of the instrument and its performance, we give an overview of the most important HIFI discoveries to date. This is necessarily very selective, but is intended to give a hint of the results obtained with this instrument that has really opened submillimeter wavelengths for high-sensitivity/high-resolution spectroscopy. © 2012 IEEE.

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