## Herschel-HIFI THz technology in action for astrophysics

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*Abstract*—The Heterodyne Instrument for the Far-Infrared (HIFI) on board of the Herschel Space Observatory is providing the astronomical community with very spectral resolution data covering many water lines, inaccessible from ground or airborne platforms and unbiased spectral surveys up to the important frequency of the [CII] line at 1.9 THz.

In this paper we present an overview of the most significant results found to date, especially on the water observations in a wide range of astrophysical objects. The performance of HIFI is very much related to a thorough characterization of the flight instrument. We will discuss the main parameters involved and indicate the main steps taken since the in-orbit performance paper.