
The Comet Interceptor mission

Pierre Henri^{*1,2} and Nicolas André³

¹Laboratoire Lagrange – CNRS : UMR7293, Observatoire de la Côte d’Azur, Université Côte d’Azur (UCA) – France

²LPC2E – CNRS : UMR7328, Univ Orléans, CNES – France

³IRAP – CNRS : UMR5277, Université Toulouse III - Paul Sabatier, CNES – France

Résumé

The **Comet Interceptor** mission will be the first to visit an as-yet undiscovered, Long Period Comet (LPC) making a flyby of the chosen target when it is on the approach to Earth’s orbit. Comet Interceptor is the first ESA fast-class mission, with contributions from JAXA. Comet Interceptor comprises three spacecraft that will perform simultaneous observations from multiple points around the comet, creating the first 3D profile of a cometary induced magnetosphere and ionosphere, as well as the first investigation of a ‘dynamically new’ object containing unprocessed material surviving from the dawn of the Solar System.

Among the Comet Interceptor payload, the Dust, Fields, Particles (**DFP**) consortium is made of complementary instruments designed to provide in situ measurements of the charged particles, the electromagnetic field and dust in the ionised environments of the yet-to-be-discovered target comet. Two of those instruments are under French responsibilities, both on board the mother spacecraft of Comet Interceptor.

First, the Low-Energy Electron Spectrometer (**LEES**) is designed and built by IRAP with contributions from Charles University, Czech Republic. LEES will determine the electron density, temperature and velocity distribution functions (from a few eV up to 1 keV) of the solar wind and cometary plasmas; and measure the properties of negatively charged ions and dust of cometary origin, along the trajectory of Comet Interceptor mother spacecraft.

Second, the COMetary Plasma Light InstruMENT (**COMPLIMENT**) is Comet Interceptor electric instrument, designed and built by LPC2E, with contributions from BIRA, Belgium, and IRF, Sweden. COMPLIMENT will measure independently the electron and ion densities, the electron temperature, the spacecraft potential, the electric field (1Hz - 3 MHz), as well as the flux of cometary (nano-)dust along the trajectory of Comet Interceptor mother spacecraft.

I will describe the Comet Interceptor mission context and objectives, as well as the complementary French plasma space plasma payloads.

*Intervenant