



## **Combined Measurements of the Magnetic Field in the Plasma Environment of 67P/Churyumov-Gerasimenko**

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In 2004, the European spacecraft Rosetta was launched to a long journey to the comet 67P/Churyumov-Gerasimenko. Two magnetometers are among the different scientific instruments. One of them is mounted on the lander Philae and incorporated into the ROMAP package. The other one (RPC MAG) is part of the Rosetta Plasma Consortium (RPC) and located on a boom outside the orbiter.

Both instruments are intended to study the plasma environment of the comet during the mission. As known from numerical simulations, this environment will change dramatically. In the early phase the activity of the comet will be low, and instead of a bow shock a Mach cone will be triggered. At this stage, Rosetta will arrive at the comet and the magnetometers will probably detect pick-up ion waves in the upstream region. In addition, the solar wind will penetrate the developing coma and reach the surface of the nucleus. Thus, our magnetometers will be able to study this situation for the first time ever. Furthermore, combined measurements of our magnetometers allow the characterisation of conductivity properties of the nucleus during the weak activity phase and a detection of a remanent magnetisation, possibly generated during formation of the comet.

Later, the activity of the comet increases and the structures such as the cometary ionopause and the diamagnetic cavity will evolve. The two instruments will allow us to study these structures and their stabilities.

We will present the design of the instruments and look forward to the next two years of unique magnetic field observations at the comet.