



Faraday cup fast plasma instruments for ESA F-class mission proposals

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Two instruments have been proposed as a part of the scientific payload for the ESA F-class mission candidates, Comet Interceptor and Debye as fast solar wind monitors. Their design is based on the fast solar wind monitor, BMSW successfully working eight years onboard the Russian Spektr-R satellite and its extension BMSW-LG for the Russian Luna-Resurs-1 mission (to be launched after 2022). Using a set of Faraday cups with divided collectors, the instruments are capable of proton moments determination with the time resolution of 32 Hz under a Maxwellian approximation. Simultaneous measurements of the solar wind full energy distribution function and helium abundance (with 3-s time resolution) is possible as well.

In the contribution, we describe the preliminary instrument design and justify how the instruments will contribute to the Comet Interceptor and Debye scientific goal fulfillment. We also assess the capabilities of the instrument to register dust particles in the cometary environment.