



## **Plasma, magnetic field and energetic particles experiment onboard Spectr-R satellite**

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The new space experiment PLASMA-F onboard upcoming Russian space mission Spectr-R is presented.

The main goals of this experiment are:

- investigation of fast solar wind plasma and magnetic field variations in the rarely studied frequency range up to 16 Hz;
- interplanetary medium monitoring in the interests of space weather research and forecast;

- investigation of magnetospheric acceleration of energetic particles.

Spectr-R satellite on an elliptic orbit with apogee about 350 000 km will almost permanently reside in the near-Earth interplanetary medium (7-8 days out of 9-day orbit) and is a convenient platform for solar wind monitoring. Periodic fast scans of the magnetosphere will provide the possibility of the magnetospheric status observations.

Experiment PLASMA-F includes four instruments:

1) Plasma spectrometer BMSW is fast monitor of the solar wind parameters -velocity, density, temperature and flux direction with time resolution up to 30 ms. In cooperation of Space Research Institute (Russia) with Charles University and Institute of Atmospheric Physics (Czech Republic), CSSAR (China) and "AALAM" Design Bureau (Kyrgyzstan).

2) Magnetometer MMFF with flux-gate and search-coil sensors for measurements of magnetic field fine structure with time resolution up to 30 ms and of electromagnetic waves 10 Hz-100 kHz. In cooperation of Space Research Institute, Mag-Sensors Co. (Russia) and Lvov Space Center (Ukraine).

3) Energetic particle detector MEP-2 for observations of energetic ions (15 keV – 3.2 MeV) and electrons (15-350 keV) of magnetospheric, solar and bow shock origin.

In cooperation of Institute of experimental physics (Slovakia), Space Research Institute (Russia) and Democritus University (Greece);

4) Intellectual data treatment system SSNI-2 designed and manufactured in Space Research Institute (Russia). SSNI-2 fulfills flexible data collection, archiving, processing, telemetry stream formation and can store the data aboard the space object for a few months in order to give the experimentator possibility to make the data analysis using step by step algorithms even if the telemetry channel is not capable to transmit the whole volume of information.