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BMSW – Fast solar wind monitor in operation

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The Spektr-R spacecraft was launched on a Zenit-3F rocket into the Earth orbit with a perigee of 10,000 kilometers and apogee of 390,000 km on July 18, 2011. The spacecraft operational lifetime would exceed five years. The main task of the mission is investigation of distant sources of electromagnetic emissions but, as a supporting measurement, the spacecraft carries a complex of the devices for solar wind monitoring. The main task of the solar wind monitor (BMSW) is to provide the fast measurements of the solar wind density, velocity, and temperature with a time resolution of 32 ms. Such time resolution was obtained using simultaneous measurements of several Faraday cups oriented permanently approximately in the solar wind direction.

We describe briefly basic principles of the measurements, bring several examples of observations that demonstrate necessity of fast measurements for a better understanding of solar wind processes and compare BMSW observations with other available solar wind spacecraft. We explain the data strategy and processing and present the data products that are already available for the broad scientific community via web page of the project.