



Expected contribution of the FAR instrument (THOR) to study of turbulence

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Although turbulence is a ubiquitous phenomenon in the Sun and its heliosphere and it is investigated for a long time, many open questions on the physical mechanisms of the turbulence generation in solar environment still remain. Turbulence Heating ObserveR (THOR) is the first mission devoted dominantly to the study of plasma turbulence. To study of plasma turbulence around the ion spectral break, we present a concept of the FAR instrument that is based on the BMSW fast solar wind monitor successfully operating six years onboard the Russian Spektr-R spacecraft. To overcome the problems encountered during its operation, FAR will use six Faraday cups with divided collectors facilitating simultaneous measurements of a full energy distribution function (with 2 s time resolution) and plasma moments (density, bulk velocity vector and thermal speed) with the time resolution of 32 Hz under a Maxwellian approximation. A novel configuration of Faraday cups allows: (1) an in-flight calibration, (2) a special designed regime for the helium content determination, and (3) fast onboard information about the solar wind bulk velocity that will be provided to other THOR payload.