



Fast variations of He abundance and their relation to solar wind disturbances

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Helium plays a significant role in the structure and dynamics of the solar corona and solar wind. Abrupt changes of the relative He abundance in the solar wind are usually attributed to encounters with boundaries dividing solar wind streams from different sources in the solar corona. However, a systematical one-year study of fast variations (on scales 3–30 s) of the relative helium abundance using the BMSW instrument onboard the Spektr-R spacecraft has shown that such significant changes are frequent and even very abrupt transitions of the ion composition occur without notable variations of other plasma parameters. We suggest that these short-time variations are generated by in-transit turbulence that is probably driven by the speed difference between the ion species. In this paper, we extend our investigation and present different behaviors of the helium abundance across various solar wind disturbances and discuss their possible origin.