

The thesis presents results of one-year measurements of solar wind helium ion abundance variations with the BMSW instrument on-board the SPEKTR-R spacecraft. The BMSW instrument was designed and built for fast measurements of the solar wind and can obtain a complete cumulative distribution function of solar wind particles every 1.5 s. A statistical study of the data shows that in spite of the current prevailing opinion, abrupt changes in the relative helium abundance do not correlate with the changes in other parameters of the solar wind and are therefore likely caused by in-transit turbulence that contributes to the solar wind heating and leads to rise of the solar wind temperature with the helium content.