



## **Compressibility of solar wind fluctuations around ion scales**

Alexander Pitna (1), Jana Safrankova (1), Zdenek Nemecek (1), Luca Franci (2,3)

(1) Charles University, Faculty of Mathematics and Physics, Department of Surface and Plasma Science, Prague, Czech Republic (offelius@gmail.com), (2) Università di Firenze, Dipartimento di Fisica e Astronomia, Firenze, Italy, (3) Queen Mary University of London, School of Physics and Astronomy, London, UK

Understanding solar wind fluctuations at and below characteristic ion scales is one of the key problems in the solar physics. The nature of these fluctuations and the processes that govern their dynamics are partially understood. Recent observational evidences suggest that the Kinetic Alfvén Waves (KAWs) could play a dominant role in the dynamics of the sub-ion scale fluctuations. In our study, we analyze high-cadence solar wind plasma measurements by BMSW on board the Spektr-R spacecraft in tandem with magnetic field measurements from the MFI instrument on board the Wind spacecraft. Our statistical analysis results in an overall agreement between the observed levels of normalized fluctuations and theoretical predictions according to KAWs. However, we found that levels of solar wind velocity fluctuations follow kinetic rather than two-fluid prediction for KAWs for plasma beta higher than  $\approx 2$ .