



## **Scintillation of spacecraft radio signals on the interplanetary plasma**

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Observations of planetary spacecraft radio signals within the solar system give a unique opportunity to study the temporal and spatial behaviour of the signal's phase fluctuations caused by its propagation through the interplanetary plasma and the Earth's ionosphere. The phase scintillation of the telemetry signal of the European Space Agency's (ESA) Venus Express (VEX) and Mars Express (MEX) spacecraft was observed at X-band with a number of radio telescopes of the European VLBI Network (EVN) in the period 2008-15, within the scope of Planetary Radio Interferometry and Doppler Experiment (PRIDE) project.

It was found that the phase scintillation spectra follow a Kolmogorov distribution with nearly constant spectral index of -2.42 for a full range of Venus orbital phases, from superior to inferior conjunctions and back. The solar wind plasma dominates the scintillation index and Doppler noise along the orbit from superior conjunction to the greatest elongation. Here, I will present the latest results of these observations, while approaching the inferior conjunction, where the Earth ionosphere starts to dominate, and also at the superior conjunction. Empirical coefficients for both contributions were estimated and compared for VEX and MEX.