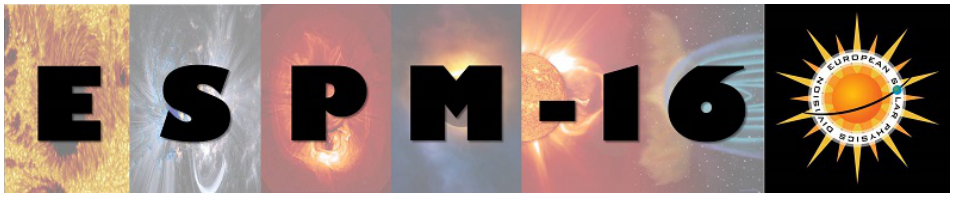

Contribution ID: **410** Type: **Poster**

Joint remote sensing-in situ measurements of solar wind plasma during the first Solar Orbiter-Parker Solar Probe quadrature

Monday, 6 September 2021 11:50 (13 minutes)

On January 18, 2021, Solar Orbiter (SolO) and Parker Solar Probe (PSP) were for the first time in a special orbital configuration, that is, in quadrature. At this time when traveling along its orbit very close to the Sun, PSP has been crossing the atmosphere of the Sun at a distance just above 20 $R_\odot$. Because of the continuous expansion of the solar corona, the plasma crossed by PSP, which is moving outward at a speed above $100-200$ km s^{-1} on the solar equatorial plane, is the same plasma observed with the Metis coronagraph just a few hours earlier at a distance of $3-7$ $R_\odot$ from the solar limb. It is, thus, the first time that the expanding coronal plasma - that is, the solar wind - fully characterized by observations remotely performed with Metis, encounters almost immediately in its way outward a suite of in-situ instruments that can directly measure its physical properties. This work deals with the joint SolO-PSP observations to study the transition of the solar wind plasma from the sub-Alfvénic solar corona to a region just above the Alfvén radius, thus aiming to investigate the evolution of the pristine solar wind not yet reprocessed by nonlinear interactions.

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Session Classification: Poster Session 1.2

Track Classification: Session 2 - The Solar Atmosphere: Heating, Dynamics and Coupling