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Metis first light Doppler dimming analysis

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The observations of the resonantly scattered ultraviolet emission of the coronal plasma obtained with UVCS-SOHO, properly designed to measure the wind outflow speed by applying the Doppler dimming diagnostics, noticeably fostered the investigation of the wind in the inner solar corona. Metis on Solar Orbiter complements the UVCS spectroscopic observations, by simultaneously imaging the polarized visible light and the $\text{H}\beta$ -Lyman- α corona in order to obtain high spatial and temporal resolution maps of the outward velocity of the continuously expanding solar atmosphere. The polarized visible light (580-640-nm), and the ultraviolet $\text{H}\beta$ -Ly α (121.6-nm) coronal emissions, obtained in the two Metis channels, are combined in order to measure the Doppler dimming of the UV emission, relative to a static corona. The plasma outflow velocity is then derived as a function of the measured Doppler dimming. The Metis first light observations, obtained on May 15, 2020, near the end of the commissioning phase of the Solar Orbiter mission, provide the first instantaneous image of the speed of the plasma outflows in the corona during the minimum of solar activity, from $4-R_{\odot}$ to $6-R_{\odot}$, and allow us to identify the layers where the fast and slow wind flow is observed.

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