9th Metis Workshop



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A software tool for computing Solar Wind Speed through Doppler Dimming diagnostics

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The Metis instrument operating on board the Solar Orbiter provides simultaneous images in the Visible Light (VL) and Ultraviolet (UV) of the solar corona in the range of distances from about 2 up to over 10 solar radii with a spatial scale of 10 arcsec in VL and 20 arcsec in UV.

VL observations enable to determine the coronal electron density, then the Doppler Dimming diagnostics, combining the data of both channels, provides full coronal maps of the proton outflow velocity.

The accuracy and reliability of the diagnostic technique is related to the calculation of expected Ly-alpha intensity, thus it depends on a number of parameters which define the chromospheric and coronal model, and on geometrical assumptions about the 3D shape of these parameters.

In this presentation, we show the Doppler Dimming Tool, DDT, a software package developed in IDL for computing the solar wind map from a couple of polarized Brightness, pB, and Ly-alpha intensity maps, taking under control all the setup and input parameters.

This code can be run through a GUI or in batch-mode over a large number of different models to study the effects of different assumptions on wind speed results.

We present a quick tutorial on how to install, run the code, display the output maps, and some results obtained with data from the cruise phase and the first year of the nominal mission. We will discuss also the plan to release the package and to develop a Python version.

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