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A variety of methods have been developed for measuring coronal flow velocities, but the lack of a target velocity poses a challenge to compare and validate the different algorithms across a wide range of altitudes not limited by the field of view of an instrument. To address this problem, we are designing a data-driven empirical model of a dynamic solar corona based on previous observations. The model mimics a transient, quasi-periodic plasma outflow described by velocity and frequency parameters reproducing the behavior of the real solar corona observed by STEREO-A/COR2, over an altitude range of 4-15 R_?. The model exhibits a realistic radial decay of the polarized brightness and includes stochastic terms accounting for physical fluctuations of plasma outflows and instrumental noises. Since the model has a predefined distribution of flow velocity and adjustable signal-to-noise ratio, it can be used as a benchmark for testing a variety of data analysis the different methods to measure coronal flow. This will allow the straightforward comparison of accuracy and performance of different data analysis methods designed to measured radial velocity and acceleration in the corona. As tracking flows in the corona is a primary goal of PUNCH, the benchmarking model will allow cross-evaluation of methods prior to PUNCH’s launch.
Meeting name
PUNCH 2 Science Meeting
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