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In this presentation we demonstrate GAMERA MHD simulations of coronal mass ejections with internal magnetic field propagating in the inner heliosphere for various solar wind backgrounds and CME defining parameters, such as angular width, speed, orientation. A CME magnetic structure is described by the analytical Gibson-Low model which allows various topologies like magnetic spheromack, flux rope, magnetic arcade. We show how different CMEs and their interactions with the solar wind background appear in the synthetic white light polarized brightness images in the field-of-view of PUNCH. As we prepare for a large ensemble of CME runs with the coupled GAMERA-Gibson&Low model, we run smaller ensembles for different solar wind backgrounds (solar min, rising phase and declining phase) and present distributions of southward Bz magnitude at 1 AU and identify differences. We also present capabilities of the GAMERA-Helio model to simulate background solar wind with resolving mesoscale structures(on order of 150,000 km) and with changing ADAPT-WSA coronal boundary conditions producing a time-dependent solution.
YouTube link
https://youtu.be/Sr3bZxDOVW8?t=1241
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