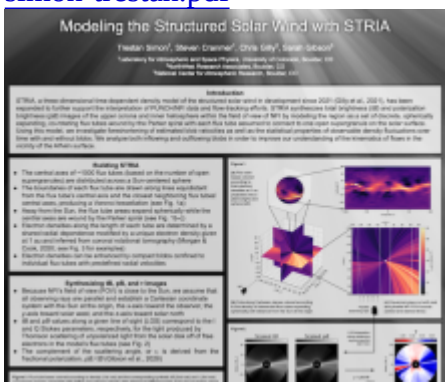
Trestan
Simon
University of Colorado Boulder
Steven R. Cranmer, University of Colorado Boulder
Chris R. Gilly, NorthWest Research Associates
Sarah E. Gibson, High Altitude Observatory
Poster
An expanded version of STRIA, a three-dimensional time-dependent density model of the structured solar wind in development since 2021, has been written in Python to support the interpretation of PUNCH/NFI data and flow-tracking efforts. STRIA synthesizes total and polarization brightness images of the upper corona and inner heliosphere within the field of view of NFI by modeling the region as a set of discrete, spherically expanding, co-rotating flux tubes wound by the Parker spiral and separated from one another by rigid walls. Each flux tube is assumed to connect to one open supergranule on the solar surface, and the central axes of the flux tubes are randomly distributed across a Sun-centered sphere. The electron densities along each tube are determined by a shared radial dependence modified by a unique correction factor inferred from coronal rotational tomography and can be enhanced by one or more compact blobs set to flow along the length of the tube. Using this model, we investigate statistical properties of observable density fluctuations over time with and without blobs as well as foreshortening of estimated blob velocities relevant to NFI flow-tracking efforts. We analyze both inflowing and outflowing blobs in order to improve our understanding of the kinematics of flows in the vicinity of the Alfvén surface.
Poster PDF
simon-trestan.pdf


Presentation file
simon-trestan.pdf
YouTube link
View recording
Meeting homepage
PUNCH 7 Science Meeting
Download Abstract