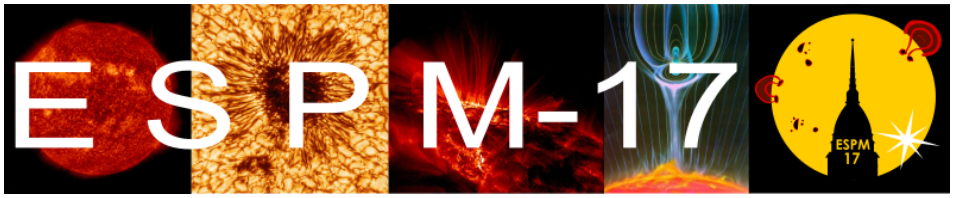

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Investigating the effect of thermal collisional plasma and turbulent acceleration in a simulated coronal acceleration region on heliospheric electron spectra

Non-thermal particle acceleration in the solar corona is evident from both remote hard X-ray (HXR) sources in the chromosphere and direct in-situ detection in the heliosphere. Correlation of spectral indices between remote and in-situ energy spectra presents the possibility of a common source acceleration region within the corona, however the properties and location of this region are not well constrained. To investigate this we perform a parameter study for both the properties of the ambient plasma of a simulated acceleration region and the turbulent acceleration profile acting on an initially isotropic thermal electron population. These electrons are propagated out to 1.0 AU with their energy spectra compared between extremes of the tested parameters. We present results of this parameter search and discuss the relative sensitivity of spectral indices across the heliosphere subject to variation in individual plasma properties and turbulent acceleration profiles consistent with a hot, over-dense source region in the lower corona. We also discuss the suitability of the heliospheric spectral index in constraining the properties of an acceleration region and compare the simulated in-situ energy spectra to that of a simulated chromospheric HXR spectra produced with the same properties.

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