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**Turbulence Transport in the Solar Corona: Theory, Modeling, and Parker Solar Probe**[1]

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A primary goal of the Parker Solar Probe Mission is to determine the heating mechanism that accounts for the very high temperature of the plasma in the solar corona. Various heating mechanisms have been suggested but one that is gaining increasing credence is associated with the dissipation of low frequency magnetohyrodynamic (MHD) turbulence. However, the MHD turbulence models come in several flavors. Two basic MHD turbulence transport models have been developed, one in which outwardly propagating Alfven waves experience reflection from the large-scale flow and density gradients associated with the solar corona, and the resulting counterpropagating Alfven waves couple nonlinearly to produce quasi-2D turbulence that dissipates and heats the corona. The second approach eschews a dominant outward flux of Alfven waves but argues instead that quasi-2D turbulence dominates the lower coronal plasma, is generated in the constantly upwelling magnetic carpet, experiencing dissipation as it is advected through the corona, leading to temperatures in the corona that exceed a million degrees. We will review the two theoretical turbulence models, describe the basic modeling that has been done, and describe tests of both models against Parker Solar Probe observations.

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