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Exploring 2.5D magnetic reconnection due to Rayleigh-Taylor induced turbulence in solar prominences

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The internal dynamics of solar prominences have been observed for many decades to be highly complex, many of which also indicate the possibility of turbulence. Prominences represent large-scale, dense condensations suspended against gravity at great heights within the solar atmosphere. It is therefore of no surprise that the fundamental process of the Rayleigh-Taylor (RT) instability has been suggested as the potential mechanism for driving the dynamics and turbulence remarked upon within observations. We use the open-source **MPI-AMRVAC** code to construct an extremely high-resolution, 2.5D fully-resistive magnetohydrodynamic model, and employ it to explore the turbulent nature of RT-induced magnetic reconnection processes within solar prominences. The intermittent events of heating and energy dissipation are caused by magnetic reconnection. Furthermore, the strength of the mean magnetic field directed into the 2D plane, and its alignment with the plane itself, creates a system with varying turbulent behaviour. Based on low plasma beta (magnetic pressure dominant) evolution near the chromosphere and a higher value (plasma pressure dominant) evolution within the corona, the stratified numerical model generates different fluctuation statistics. Hence, we find the turbulent dynamics and prominence reconnection events to differ distinctly from those elsewhere within the solar corona.