



## **Reduced kinetic simulations of energetic particle transport in magnetised plasmas**

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Energetic non-thermal particles can carry a substantial fraction of energy in solar flares, and are also important in many other space and fusion plasmas. The magnetohydrodynamic (MHD) approach cannot adequately describe non-thermal particle acceleration and transport, while the full kinetic treatment is too computationally expensive, especially given the wide disparity between global length-scales and kinetic plasma scales. We explore the possibility of a part-kinetic/part-MHD description of mildly non-thermal magnetised plasma. The idea of the proposed hybrid approach is to describe the parallel (to magnetic field) motion of particles using the drift-kinetic approach (with arbitrary parallel velocity distribution), while using the MHD description for perpendicular transport. We discuss the applicability and limitations of this method and, as an initial test of the methodology, demonstrate a 1D model of electron beam precipitating in the solar atmosphere.