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Excitation and dissipation of slow mode standing waves in hot coronal loops

Xing Li
University of Wales, Aberystwyth, UK

The excitation and dissipation of slow MHD waves in hot coronal loops are numerically investigated in realistic loop models. We have included proton and electron heat conduction, proton parallel viscosity, radiation loss, gravitational stratification in our models. These coronal loops are constructed by the dissipation of turbulently excited Alfven waves at a Kolmogorov rate. It is shown that a substantial increase of the turbulence level can excite large amplitude standing MHD waves with the fundamental frequency in a hot coronal loop. However, they are not pure standing waves. Propagating waves with less important contribution also co-exist with the dominant standing waves. These waves may be called quasi-standing waves. These quasi-standing waves dissipate rapidly primarily due to electron heat conduction. Our results reveal that velocity oscillations near the loop apex can last five observationally visible periods. However, velocity oscillations away from the apex appear to dissipate more strongly than at the apex: only three (or less) visible oscillations can be observed.