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Simulations of coronal loops undergoing transverse decay-less oscillations

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Observations of solar coronal loops with the Atmospheric Imaging Assembly (AIA) instrument of SDO have revealed the existence of a low amplitude decay-less regime of transverse oscillations. These appear to be like the well understood large amplitude and rapidly decaying fast kink-mode oscillations observed in loops, but their means of excitation and exact nature are still debated. Addressing these two questions is essential for using the former as diagnostic tools in coronal seismology, as well as determining their potential role in wave heating of the solar corona. In this talk, results from a number of 3D numerical magnetohydrodynamic studies will be presented, in which we have studied loops undergoing decay-less oscillations. The different proposed interpretations and excitation mechanisms of these waves will be presented, alongside our results on the spatial evolution of these oscillating loops. Wave energy dissipation in the case of decay-less oscillations will also be discussed, alongside some of our recent findings supporting the idea that the dissipated energy can potentially overcome of the radiative losses for the Quiet Sun.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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