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Modelling the propagation of slow magnetoacoustic waves in a multi-stranded coronal loop

Krishna Prasad Sayamanthula and Tom Van Doorsselaere
Centre for mathematical Plasma Astrophysics, Department of Mathematics, KU Leuven, Leuven, Belgium
(krishna.prasad@kuleuven.be)

The cross-field thermal structure of a coronal loop is one of the critical parameters useful to distinguish the major heating theories. In a recent study we are able to isolate two thermal components of a coronal loop using observations of propagating slow magnetoacoustic waves in two different temperature channels. In order to properly interpret these observations and identify the actual cross-field thermal structure, we develop multiple three-dimensional magnetohydrodynamic models of coronal loop. In each of these models slow magnetoacoustic waves are driven by perturbing the plasma at one end and the corresponding multi-wavelength propagation characteristics are studied by applying forward modelling techniques. We compare the wave propagation properties between different models including a monolithic and a multi-stranded model with those from observations to draw some important inferences which will be discussed in this talk.