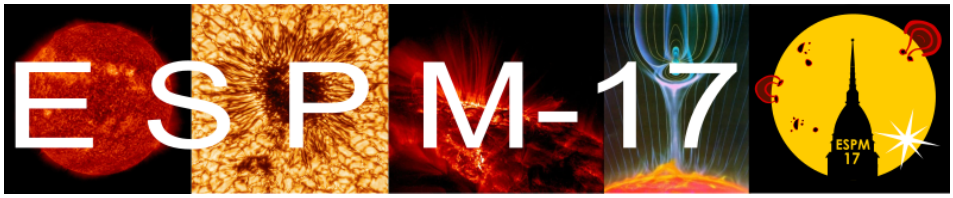

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Coronal Loops are not one-dimensional

Closed magnetic loops make up a large part of the magnetically closed corona of the Sun and other stars.
Coronal loops come in different shapes and sizes.
Loop length, magnetoconvection at the footpoints and numerical resolution influence loop properties such as temperature, density and velocities.
These parameters in turn influence observable quantities such as emission intensity and the profile of spectral lines.
We model coronal loops as straightened magnetic flux tubes in a Cartesian box including a realistic convection zone at each end. This setup simplifies controlling loop parameters such as the loop length.
On stars other than the Sun, the small-scale structure of the corona cannot directly be observed. Instead, we rely on scaling laws to interpret observations.
Analytical scaling laws relate properties such as maximum temperature, loop length and pressure. These scaling laws, however, assume one-dimensional loops in equilibrium.
We conduct a parameter study of coronal loops in full 3D, varying loop length and the convection pattern at the footpoints.
We review coronal loop scaling laws for a variety of 3D MHD loop simulations with different parameters with respect to modelling stellar coronal loops.

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