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Global coronal models driven with Alfvén and kink waves

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In recent years, the so-called AWSOM models are a new generation of solar atmospheric models, which incorporate the heating and forces of Alfvén waves on top of more classical effects. They are outperforming older models capturing most aspects of the solar corona, but are still lacking in open field regions because of the lack of reflections and turbulence development.

In this contribution, I will highlight our development of a new formalism that allows to describe the kink wave on coronal plumes and loops in a similar way as the Alfvén waves in the AWSOM models. In this new development, we generalise the Elsässer variables to Q -variables in order to follow waves that are not Alfvén waves. In the talk, I will explain the governing equations, highlight early outcomes of the proof-of-concept in 1D configurations, where I show that kink wave driving leads to additional coronal heating.

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