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## **Energy deposition through Landau damping**

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Charged particles and plasma waves occur throughout the solar system. These particles can move slowly relative to the plasma or be accelerated to relativistic speeds by reconnection events such as solar flares. The types of waves depend on whether one considers the plasma in the solar chromosphere, solar corona, solar wind or the planetary magnetospheres. In this study we investigate the amount of energy that becomes available when the charged particles interact with the plasma waves through the mechanism of Landau damping. The linearised Vlasov equation is solved, from which we obtain an expression for the total amount of energy available for transfer through the Landau mechanism. The interactions with Alfven, slow and fast magnetosonic, as well as ion-cyclotron waves are obtained. In each case the energy deposited into the plasma is calculated, which is then available to do work in the form of heating or acceleration of the local plasma. The final expressions are presented in terms of Stokes parameters.

## 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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