

# THE RELATION BETWEEN CYCLOTRON HEATING AND ENERGETIC PARTICLES ON OPEN CORONAL FIELD LINES

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Cyclotron resonance with high-energy Alfvén waves has been proposed as an ion heating mechanism for producing high-speed winds and large ion temperatures in coronal holes. In the simplest model the waves propagate undisturbed until they are dissipated at a distance where the ion cyclotron frequency becomes comparable to the wave frequency. A more complex model includes the effects of nonlinear interactions that cascade the wave power from low to high frequencies. The mean free path of energetic particles acts as an important parameter to particle acceleration and propagation in solar corona. Thus the fluctuation spectrum required by the heating models is directly coupled with high energy particle production.

In this report we present the energetic particle mean free path on open coronal field lines, resulting from the cyclotron heating model, and study its implications to particle acceleration. The constraints set for the heating models are discussed.