The Influence of Coronal Radiation on Prominence Plasma

Gerrard Brown*[1], Nicolas Labrosse[1], Petr Heinzel[2], and Lyndsay Fletcher[1]

[1]University of Glasgow (Glasgow Univ.) – Glasgow G12 8QQ Scotland, United Kingdom
[2]Astronomical Institute, Academy of Sciences of the Czech Republic – Fricova 298 251 65 Ondrejov, Czech Republic

Abstract

Prominences, also known as filaments, are cool, dense structures located in the corona. They are influenced by the coronal radiation illuminating them. Many emission lines are found in the coronal spectrum, and the impact of these lines on the properties of the prominence plasma is examined.
To do this we model the hydrogen spectrum emitted by a one dimensional prominence slab under non-LTE conditions. We use CHIANTI to compute the intensity of the coronal radiation received by a point located in the corona. This is then used as boundary condition to solve the radiative transfer equation in the prominence.This allows us to investigate the effect of the coronal radiation on the properties of the plasma and on the intensities of the emitted hydrogen lines.

Keywords: radiative transfer, coronal radiation, prominence, filament, corona

*Speaker