



Contribution ID: 161

Type: Poster

Modelling line emission in the transition region

Wednesday, 8 September 2021 12:05 (13 minutes)

Fundamentally different models are required for line emission in the corona compared to the chromosphere. Modelling the corona is remarkably straightforward by comparison, and the tendency for modellers and observers is to use coronal modelling in the transition region as well. Discrepancies with observations become obvious, however, when using the modelling for lines emitted by low charge ions.

To investigate more suitable modelling for the transition region, the coronal approximation is extended by including atomic processes which become more important further down in the atmosphere. These include the effects of higher density on free electron processes, and the influence of photo-ionisation and charge transfer. Models have been built for the main elements observed in this region (C, N, O, Ne, Mg, Si and S), and significant changes are seen compared to coronal modelling.

To assess how much the results reflect conditions in the transition region, line intensities are predicted using differential emission measure modelling. Observations of the quiet Sun show that a number of discrepancies are resolved for low charge ions when using the new modelling.

Student poster?

Do you want to be considered for a student poster prize?

Primary author: DUFRESNE, Roger (University of Cambridge)

Co-authors: Prof. STOREY, Peter (University College London); Prof. BADNELL, Nigel (University of Strathclyde); DEL ZANNA, Giulio (University of Cambridge (UK))

Presenter: DEL ZANNA, Giulio (University of Cambridge (UK))

Session Classification: Poster Session 6.4

Track Classification: Session 3 - Fundamental Plasma Processes in the Solar Atmosphere: Magnetic Reconnection, Waves, Emission, Particle Acceleration