

Thanassis

Katsiyannis

Royal Observatory of Belgium

Joseph Lemaire, Université Catholique de Louvain (UCL), Belgium

Oral

Since the discovery of the solar corona, many attempts have been made to model its behaviour. Perhaps the most well-known attempt was made by Parker (1958) when he assumed that the quiet sun corona is in hydrodynamical balance. Nevertheless, his model has several limitations (a saddle point, non-diverging solutions, etc). Lemaire & Stegen (2016) introduced the DYN model that addressed those issues by assuming a more realistic electron density distribution and boundary conditions based on in-situ observations at 1 au.

More recently, Lemaire & Katsiyannis (2021) expanded further on the DYN model and produced electron temperature profiles ($T_e(r)$) for a variety of observed conditions. They found a very large increase in $T_e(r)$ at radial distances of $\sim 2-5$ solar radii and conjectured that a heating process takes place at those levels.

This contribution will present the DYN model, with its assumptions and limitations. It will also contain the most important results published by Lemaire & Stegen (2016), and Lemaire & Katsiyannis (2021). Furthermore, a yet unpublished temperature profile based on more accurate electron density distribution measurements will be shown. A comparison between those results and recently published observed temperatures will provide a useful insight to the QS middle corona. Finally, there will be a discussion about future work and the synergy of observations and modelling.

[Download to PDF](#)