



## **Turbulent heating and cooling of coronal loops**

**E. Buchlin** (1), P. J. Cargill (1), S. J. Bradshaw (1) and M. Velli (2)

(1) Imperial College, London, (2) Università di Firenze and Jet Propulsion Laboratory

We consider the coupling of both heating and cooling processes in coronal loops, including for the first time a feedback of the cooling on the heating. The heating is computed by a set of shell-models (see other contribution in this session) representing the non-linear interactions of MHD; they are coupled by Alfvén waves travelling along the loop from the footpoints, where the energy is introduced by motions of the photosphere. The shell-models display properties of anisotropic turbulence and intermittency. The heating computed by this model is then used as an input of a hydrodynamic model of a loop with thermal conduction and a self-consistent treatment of radiation (including non-equilibrium ion populations). The dynamic density profiles computed by this model are in turn used as an input for the heating model, providing thus a visible feedback on the heating.