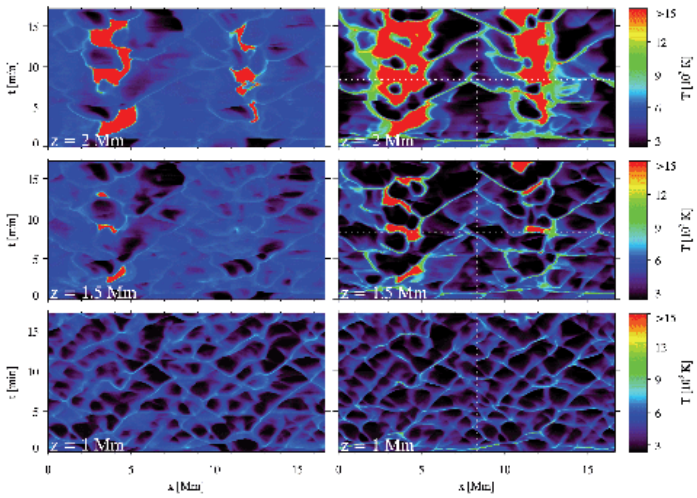
Astronomy & Astrophysics

HIGHLIGHTS: this week in A&A

Volume 473-2 (October II 2007)



Non-equilibrium ionization in the solar atmosphere

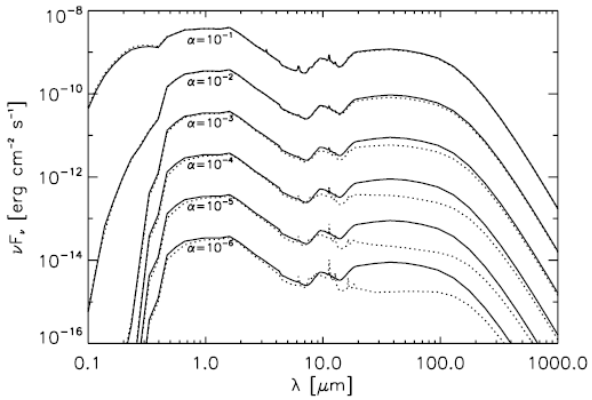
"Non-equilibrium hydrogen ionization in 2D simulations of the solar atmosphere" by J. Leenaarts, M. Carlsson, V. Hansteen, and R.J. Rutten, A&A 473, p. 625

This paper describes a big step forward in 2D chromospheric simulations because it includes not only the non-equilibrium ionization process but also the consequences of the non-equilibrium ionization for the energy balance. So far this has only be possible in 1D simulations. Now one can also study the interaction of different structures accounting for the non-equilibrium ionization effects.

Dust sedimentation and PAHs in protoplanetary disks

"Dust sedimentation in protoplanetary disks with polycyclic aromatic hydrocarbons" by C.P. Dullemond, Th. Henning, R. Visser, V.C. Geers, E.F. van Dishoeck, and K.M. Pontoppidan, A&A 473, p. 457

The authors investigate how the presence of PAH molecules, when mixed with the larger dust grains, affects the spectral energy distribution of protoplanetary discs when the large grains are allowed to sediment. For low levels of turbulence in the disk, they predict that the PAH emission-to-continuum ratio is enhanced, contrary to what is observed. They speculate that coagulation might be a possible solution to this discrepancy.



In section 4. Extragalactic astronomy

"Dust-scattered X-ray halos around two Swift gamma-ray bursts: GRB 061019 and GRB 070129" by G. Vianello, A. Tiengo, and S. Mereghetti A&A 473, p. 423

This paper reports the Swift XRT detection of two new X-ray scattering halos during the afterglow phase of gamma-ray burst sources GRB061019 and GRB070129. In both cases, the halos are well resolved in time. The authors found a known Galactic molecular cloud superimposed along the line of sight toward GRB061019 at a distance consistent with the cloud of about 1 kpc. In the future, correlations of high-latitude molecular clouds with GRBs may be useful probes of Galactic molecular environments.