Astronomy & Astrophysics

HIGHLIGHTS: this week in A&A

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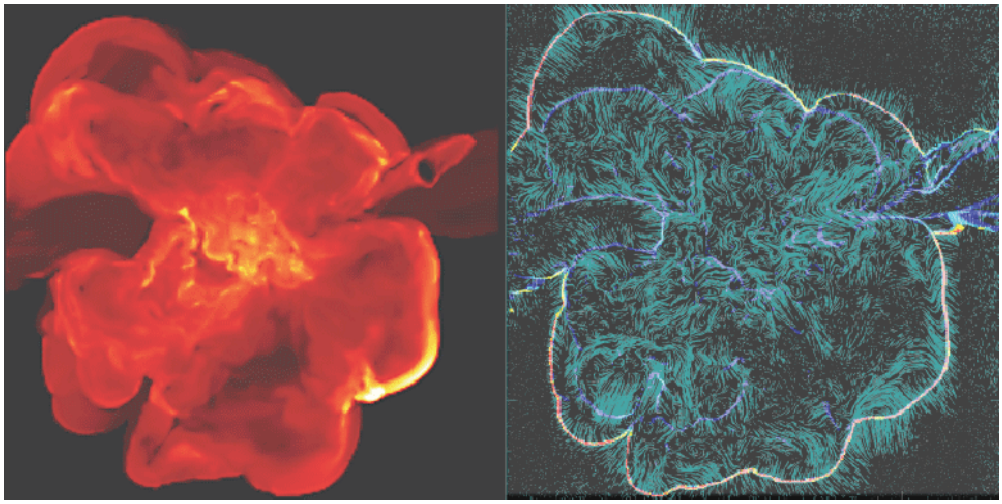

In section 3. Cosmology (including clusters of galaxies)

"Turbulent motions and shocks waves in galaxy clusters simulated with adaptive mesh refinement", by F. Vazza, G. Brunetti, A. Kritsuk, R. Wagner, C. Gheller, and M .Norman, A&A 504, p. 33

The physics of shocks and turbulence in diffuse cosmic gases is widely recognized as playing an important role in the formation and evolution of galaxies and galaxy clusters, and they affect many of observable properties of such objects. However, studying these phenomena theoretically has proven to be a very difficult challenge for even the best currently available numerical simulations. The main difficulty is the requirement of simultaneously resolving the small spatial scales on which these processes manifest themselves and the largest ones at which the turbulent energy is injected by gas stripping, ram pressure, galaxy mergers, tidal forces, etc. By implementing new rules into an existing adaptive mesh refinement code (called ENZO) to control the refinement of the numerical grid in the regions in which turbulence and shocks are more active, the authors seem to indicate a potentially promising technique for studying the origin and effects of these physical processes.

In section 7. Stellar structure and evolution

"Spectroscopy of the symbiotic binary CH Cygni from 1996 to 2007", by M. Burmeister and L. Leedjärv, A&A 503, p.171

The paper presents a spectacularly comprehensive decade-long study of the line profile, flux, and radial velocity variability of the S-type symbiotic star CH Cyg, a period long enough to span nearly half of an orbital period (approximately 5700 days) and covering a broad range of activities. Some signature of orbital modulation is found in the principal emission lines (Balmer, helium), the strongest being slightly before periastron passage. The He II 4686 line was detected but not strongly correlated with activity (although strongest at U minimum). The 756 day period, detected in infrared observations, was also detected in Balmer line variations during the extended quiescence period from 2000 - 2006, Models are presented for a possible accretion disk and orbitally-modulated wind accretion variations as causes of the line variability.