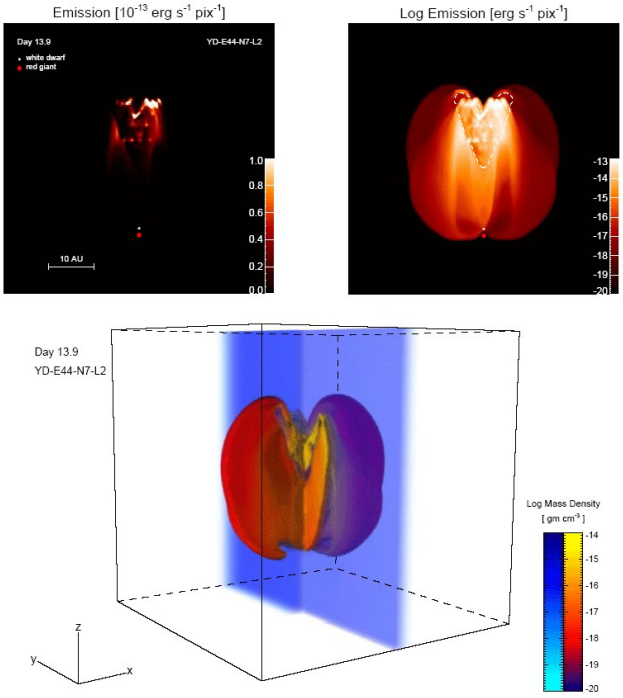
HIGHLIGHTS: this week in A&A

Volume 493-3 (January III 2009)

In section 6. Interstellar and circumstellar matter

"Three-dimensional modeling of the asymmetric blast wave from the 2006 outburst of RS Ophiuchi: Early X-ray emission", by S. Orlando et al., A&A 493, p. 1049

This paper is the first 3-D simulation of interaction between the blast wave and the circumstellar matter including radiation loss in RS Ophiuchi, a symbiotic recurrent nova, which erupted last in 2006. It provides a new understanding of the line profiles of X-ray spectra in this nova, which may have implications for whether or not RS Ophiuchi is a Type Ia SN progenitor system.



In section 10. Planets and planetary systems

"Standing on the shoulder of giants: Trojan Earths and vortex trapping in low mass self-gravitating protoplanetary disks of gas and solids", by W. Lyra et al., A&A 493, p. 1125

"On the growth and stability of Trojan planets", by P. Cresswell and R. P. Nelson, A&A 493, p. 1141

In this issue of A&A, Lyra et al. predict that Trojan planets of masses up to several times the mass of the Earth may form next to Jupiter-size giant planets. This all happens as a giant planet is forming in a disk of gas around a young star: the giant planet carves a gap in the gaseous disk, but also create vortexes in this disk. Small particles (centimeter to meter-size) that are present in the disk accumulate in these vortexes. The mechanism had been discussed in the past, but Lyra et al. now show that it indeed leads to the formation of 2 super-Earths leading and trailing the giant planet, respectively.

In the same issue, Cresswell & Nelson approach the problem from a different perspective. They start from a young disk in which two Earth- to Neptune-mass planets share the same orbit (possible when a system with multiple planetary embryos form and violently scatter each other) and monitor their orbital evolution and growth to giant planet masses while they both migrate in the disk and capture some of its gas. They find that the system evolves to grow two Trojan giant planets in situations in which the planetary migration is not too pronounced. But Cresswell & Nelson indicate that short-period Trojans containing at least one giant planet may form in situations in which the embryos are initially not too far from the central star.

In section 14. Catalogs and data

"A new catalogue of observations of the eight major satellites of Saturn (1874-2007)", by J. Desmars et al., A&A 493, p.1183

The authors present a new catalog of observations of the satellites of Saturn that cover the years 1874 to 2007. The catalog includes 130000 observations of the 8 major satellites, twice more than the previous existing catalog. This is very useful for extremely precise ephemerides of the saturnian system.