Astronomy & Astrophysics

HIGHLIGHTS: this week in A&A

Volume 508-1 (December II 2009)

In section 6. Interstellar and circumstellar matter

"Dust amorphization in protoplanetary disks", by A. M. Glauser, M. Güdel, D. M. Watson, T. Henning, A. A. Schegerer, S. Wolf, M. Audard, and C. Baldovin-Saavedra, A&A 508, p. 247

Can stellar winds amorphize silicate grains in the disks around young stars? Glauser et al. examine this question by measuring the dust crystallinity in 42 class II T Tauri stars, using observations of the 10 micron silicate feature made with the Spitzer IRS instrument. They find a reduction in the crystalline silicate dust fraction, which anti-correlates with the X-ray luminosity and X-ray hardness of the central star (for 20 objects in their sample with an age range of ~ 1 to 4.5 Myr.) They postulate that X-rays are a proxy for stellar activity and therefore trace the energetic ions in the stellar winds that interact with the circumstellar disk and amorphize crystalline silicate grains.