



Centre Especial de Recerca en
Astrofísica, Física de Partícules i Cosmologia
C/ Martí i Franquès, 1
E - 08028 Barcelona

CENTRE ESPECIAL DE RECERCA EN ASTROFÍSICA, FÍSICA DE PARTÍCULES I COSMOLOGIA (CER)

SEMINARI:

The binary progenitor of Tycho Brahe's supernova

**a càrrec de PILAR RUIZ-LAPUENTE
Departament d'Astronomia i Meteorologia
Universitat de Barcelona**

RESUM:

Type Ia supernovae are very important cosmological probes as they have homogeneous empirical properties and they are observable up to the farthest distances in the Universe. Their use as cosmic distance indicators led to the discovery of the acceleration of the expansion of the Universe and they are being used to understand what is driving this accelerated expansion.

However, despite their good empirical understanding, Type Ia supernovae are not fully understood as stellar explosions. They are thought to arise when a white dwarf accretes matter from a companion star, is compressed and undergoes a thermonuclear explosion. The binary path had not been previously tested observationally. Through exhaustive observational campaigns, we have searched for the companion star of the binary system that gave rise to the bright Type Ia supernova observed in 1572 by Tycho Brahe and other astronomers. Tycho Brahe's supernova (i.e., SN 1572) is one of the only two supernovae in our Galaxy that is thought to have been of Type Ia (the other having been SN 1006). A survey of the central region of its remnant, around the position of the explosion, excludes red giants as the mass donor of the exploding white dwarf. We found a type G0--G2 star, similar to our Sun in surface temperature and luminosity (but lower surface gravity), moving at more than three times the mean velocity of the stars at that distance. This star appears to be the companion of the supernova. The survey in SN1572 and a similar one being conducted in SN1006 has clarified the path leading to SNe Ia explosions.

**Sala de Graus de la Facultat de Física
Dimecres, 15 de desembre de 2004, a les 17 hores**

Informació: verdague@ffn.ub.es
ferran@am.ub.es

Comptem amb la vostra assistència