

# ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ

## ΤΜΗΜΑ ΦΥΣΙΚΗΣ

### ΣΕΜΙΝΑΡΙΟ

ΤΟΜΕΑΣ ΑΣΤΡΟΦΥΣΙΚΗΣ, ΑΣΤΡΟΝΟΜΙΑΣ ΚΑΙ  
ΜΗΧΑΝΙΚΗΣ

Θέμα: **The progenitor problem of Supernovae Type Ia**

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Ώρα: **11:00**

#### Περίληψη:

The use of Supernovae Type Ia (SNe Ia) as cosmological "standard candles" have revolutionised cosmological studies, resulting in the remarkable discovery that the expansion of the Universe is accelerating. Moreover, SNe Ia play an important part for the dynamical and chemical evolution of the galaxies and, consequently, the Universe. However, the exact nature of the progenitor system that leads to the explosion remains unknown. While there is a consensus that SNe Ia are thermonuclear explosions of accreting Carbon-Oxygen white dwarfs (WDs), the nature of the companion star to the WD is debatable, with two main channels being proposed: the single-degenerate scenario (SD) and the double-degenerate scenario (DD). In this talk, I will review the current state of research regarding this phenomenon, focusing on the study of the X-ray and optical late time behaviour of the SN light curve. I will present hydrodynamical simulations and late time observational data that provide evidence of circumstellar material that surrounds the explosion centre, possibly originating from outflows from the companion star, giving indication of a distinct population originating from the SD channel.