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### Seminar

## Constraining progenitors and explosion mechanisms of supernovae through their nucleosynthesis characteristics (in English)

SPEAKER: Prof. Keiichi Maeda  
(Kyoto University)

DATE : Nov. 15th (Thu.) 15:30-

PLACE : Kenkyu Honkan 1F, Meeting Room 3

Supernovae (SNe) are the explosive death of stars, either triggered by gravitational collapse of massive stars (CCSNe; core-collapse SNe) or thermonuclear runaway of a white dwarf (SNe Ia). Identifying the natures of their progenitors and explosion mechanisms is one of the central issues in stellar astrophysics and observational transient science. In this talk, I will first introduce basic concepts of the SN explosion nucleosynthesis. Then, a review is given on how different progenitors and explosion mechanisms would manifest themselves in observational properties of SNe. Finally, I will quickly go through some examples of recent progresses in individual topics, where the observational data are used to constraint the natures of the progenitors and explosions through the nucleosynthesis arguments; (1) the white dwarf masses and modes of thermonuclear runaway in SNe Ia, (2) the masses of progenitor stars for different classes of CCSNe, and (3) the standard neutrino-driven explosion models and beyond as confronted by the observations of CCSNe and peculiar outliers (such as those associated with Gamma-Ray Bursts).

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