

# Satellite gamma-ray line astrophysics and future MeV detectors

*Wednesday 8 May 2024 14:40 (20 minutes)*

Gamma-ray lines around MeV bands provide the new astronomical window for the nuclear astrophysics. At present, we have performed the gamma-ray line studies on the cosmic nucleosynthesis with the gamma-ray satellites. Here we briefly review the observations of gamma-ray lines with the INTEGRAL/SPI. Present gamma-ray line spectroscopy discovered  $^{60}\text{Fe}$ ,  $^{26}\text{Al}$ , 511 keV lines in the Galaxy, which provide direct evidence for nucleosynthesis ongoing in the Galaxy. Detections of  $^{44}\text{Ti}$  and  $^{56}\text{Ni}$  decay chains in nearby SNe and SNRs constrain SN explosion physics. MeV astronomy and gamma-ray line spectroscopy are hindered due to the sensitivity limit of the present space gamma-ray detectors in MeV bands. Future MeV gamma-ray telescope is requested, and can deeply improve the detection window for nuclei in the cosmos. A soft gamma-ray polarimeter for a microsatellite will be designed for the pathfinder, which is the new window for MeV polarization and sciences : gamma-ray lines, pulsars, X-ray binaries.

## Collaboration (if any)

**Primary author:** Prof. 王, 伟 (武汉大学)

**Presenter:** Prof. 王, 伟 (武汉大学)

**Session Classification:** 07 - 核天体物理

**Track Classification:** 07 - 核天体物理