Contribution ID: **230** Type: **Invited**

Nuclear astrophysics with gamma-ray line observations

Monday 26 June 2006 09:30 (30 minutes)

Gamma-ray spectrometers with high spectral resolution are operating in space since 2002: RHESSI and SPI on INTEGRAL. Understanding the instrumental response and backgrounds is major effort but a prerequisite of detailed science interpretations. While 44Ti from core collapse supernovae could not be detected, this still adds constraints to Cas A 44Ti ejection. Diffuse nucleosynthesis is studied through 26Al, 60Fe, and positron annihilation gamma-ray measurements. With SPI on INTEGRAL, the gamma-ray line from decay of radioactive 26Al could be measured at unpredecented spectroscopic precision. This made possible a new determination of the total mass of 26Al produced by stellar sources throughout the Galaxy, and an analysis of the properties of the interstellar medium around 26Al sources. 60Fe is clearly detected with SPI, its intensity ratio to 26Al is confirmed to be on the lower side of theoretical predictions. Nucleosynthesis sources are probably minor contributors to Galactic positrons, as deduced from the bulge-centered spatial distribution of the annihilation gamma-ray emission.

Primary author: DIEHL, Roland (MPE Garching)

Presenter: DIEHL, Roland (MPE Garching)

Session Classification: 1 Stars: observations, evolution & nucleosynthesis

Track Classification: Element production, stellar evolution and stellar explosions