

## Z303a MeV Nuclear Gamma-Ray Lines and Continuum Emission from Solar System Objects

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The decay of the radioisotope  $^{26}\text{Al}$  results in the emission of gamma-rays at 1.8 MeV. This gamma-ray line is a key target for MeV gamma-ray observations. While we have observed the Galactic  $^{26}\text{Al}$  emissions,  $^{26}\text{Al}$  also exists on the surface of airless celestial bodies in the Solar system, due to cosmic-ray-induced nuclear spallation. Meteorites sampled on the Earth and lunar surface samples allow us to measure current  $^{26}\text{Al}$  decay rates in laboratories. Similarly, the radioisotope  $^{60}\text{Fe}$ , which has decay energies of about 1.2 and 1.3 MeV, has been studied. Based on these decay rates and simulations conducted with the Geant4 Monte Carlo code, we report the expected intensity of nuclear gamma-ray lines including MeV continuum emissions from Solar system objects, specifically from the main belt asteroids and the Moon. We show that future MeV gamma-ray missions, such as the Compton Spectrometer and Imager (COSI), will be able to capture the  $^{26}\text{Al}$  signals from the Moon.