

NEWS-G Detector Calibration

Monday 15 August 2022 16:27 (12 minutes)

NEWS-G develops spherical proportional counters (SPCs) for low-mass dark matter detection. SPCs are spherical detectors with a sensor at the centre that can be filled with various target gases. To effectively interpret detector data, the detector needs to be calibrated using various sources of known energy. Particularly for low-mass dark matter detection, aluminium x-rays can be used as a low-energy calibration source. The method devised at NEWS-G for generating aluminium x-rays is to wrap an americium-241 source in aluminium foil, as the alpha particles released by the americium will deposit energy in the foil and cause x-rays to be emitted. This talk will highlight the importance of detector calibration in dark matter detection and describe the process of optimizing the americium source's aluminium foil thickness such that alpha particles are not released into the detector while also ensuring sufficient aluminium x-ray emission.

Author: BABAYAN, Irina

Presenter: BABAYAN, Irina

Session Classification: Session IV