

## A dark matter search with NaI(Tl) crystals by using a pulse shape discrimination analysis

KIMS-NaI is an experiment aimed at directly detecting Weakly Interacting Massive Particle (WIMP) via weak interactions with the nuclei in low-background NaI(Tl) crystals. Underground data for the WIMP search were obtained in the Yangyang underground laboratory with two NaI(Tl) crystals that have unprecedentedly high light-output. Since the scintillation characteristics of nuclear recoils from WIMP interactions and electron recoils produced by many background processes are different, it is possible to distinguish between the two types of events by means of pulse shape discrimination (PSD) methods. We characterized the pulse shapes produced in an NaI(Tl) test crystal by neutrons from a deuteron-based generator and gamma rays from a radioactive source. Surface nuclear recoils that could be misidentified as candidates for WIMP-induced events were also investigated and taken into account in the analysis. Preliminary results based on a PSD analysis of a 2967 kg\*day data exposure will be presented.

**Primary author:** Dr KIM, Kyungwon (Center for Underground Physics, IBS)

**Presenter:** Dr KIM, Kyungwon (Center for Underground Physics, IBS)