Contribution ID: **99** Type: **Oral presentation (young scientists)**

Search for dark matter in solid state devices using radiation damage.

Thursday, 21 July 2022 16:10 (10 minutes)

The Radiation Damage in CCDs (RADAC) is a collaboration between theorists and experimentalists with expertise in solid state physics, ultra-low noise CCDs (DAMIC-M) and radiation damage (RD50). In the first quarter of 2022, RADAC achieved its first goal of observing radiation damage caused by nuclear recoils in CCDs developed for direct detection of dark matter. Nuclear-recoil events were induced with a neutron source on a CCD and the generated crystal defects were then spatially identified as "hot spots"of leakage current while operating at moderately high temperatures. This same technique could be employed to search for radiation damage caused by dark matter interactions. In this detection channel, the dark matter signal amplitude has a time dependence related to the Earth's rotation and movement through the dark matter cloud. I will present the development of the experimental technique, including results from the recent neutron irradiation campaign, and describe its application for the search of dark matter.

Primary author: LEE, Steven Juhyung (University of Zurich (CH))

Presenter: LEE, Steven Juhyung (University of Zurich (CH))

Session Classification: Parallel 3A - Direct detection (calibration and new approaches)