

## Celebrating 60 Years of Nuclear Science at UKAL

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The University of Kentucky Accelerator Laboratory (UKAL) celebrates the 60th year of continuous operation of its 7 MV model CN VDG accelerator in 2024. While the laboratory's capabilities at low energy are quite broad, neutron induced reactions and neutron scattering investigations have dominated the UKAL scientific program for the last 30 years. Nuclear structure investigations using the (n,n'y) reaction focus on the study of nuclei important for 2B and 0v2B decay experiments, with experiments that improve the structure knowledge of the parent [1] and/or daughter nuclei [2]. Other nuclear structure investigations examine shape coexistence and the evolution of few particle and collective excitations across isotopic or isotonic chains. Since its inception the laboratory's experimental program has also concentrated on the detection of elastically and/or inelastically scattered neutrons [3]. Recently neutron- detection experiments have investigated cross sections on materials important for, e.g., energy production, while simultaneously helping to develop a better basic understanding of how neutrons interact with matter. Scientists from other universities, national laboratories, and industry use the facilities to test detectors, to study background from low-energy VDGs, and to interrogate materials with neutrons. New developments at UKAL will enhance the experimental program going forward. Ongoing developments and experimental investigations related to 0v2B decay, shape coexistence and neutron scattering will be presented. This work is supported by the National Science Foundation (PHY-2209178) and the Department of Energy (DE-SC0021424, DE-SC0021243, DE-SC0021175)

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