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Exploring Isomeric States near Doubly-Magic 208Pb[1] ANDREW KNOX, SUJIT TANDEL, PARTHA CHOWDHURY, University of Massachusetts Lowell — The shell model of nuclear structure involves calculating the energy levels of a nucleon in an appropriate attractive potential well. The levels follow a shell structure, with large energy gaps between shells. The number of nucleons required to fill a shell is referred to as a "magic number". Probing these shell gaps is an important objective of nuclear structure physics, as it tests and allows fine tuning of the potential well. One way to probe the single- particle levels is to examine metastable excited states, known as isomers, near these shell gaps. Using gamma-ray spectroscopy it is possible to deduce decay schemes and half-lives of these isomers, and subsequently infer information about the excitation mechanism and shell gaps. This project consists of establishing half-lives of isomeric stats in nuclei near 209Bi, which has one excess proton over doubly "magic" 208Pb. Excited states at high angular momentum were populated with the ATLAS accelerator facility at Argonne National Laboratory using a 209Bi beam incident on a 248Cu target. The Gammasphere detector array was used for data acquisition.

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