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The Structure of 34Mg Nuclei BENJAMIN LUNA, Tennessee Technological University — In the chart of nuclei below the beta-stability line, there are regions called islands of inversion where nuclei are expected have a spherical ground state, but it has been determined that these nuclei have a deformed ground state. This project was part of an ongoing investigation with the goal of obtaining new information about 34Mg and 34Al, which lie near an island of inversion. A beam of 34Mg was sent to the center of an array of plastic scintillators and HPGe detectors to collect data from the isotope's beta decay. This isotope beta decays to 34Al and to 34Si. The analysis softwares ROOT and GRSISort were used to sort the data into analysis trees, from which certain histograms were extracted. These histograms were used to determine an initial list of gamma ray transitions associated with the relatively fast decays of 34Mg and 34Al. Since the efficiencies of gamma ray detection are known, the true number of counts from each transition can be determined. This was done to order the gamma ray transitions into a nuclear level scheme. Future work on this subject will include the analysis of the angular correlations of the transitions found to determine spins of states populated in the 34Al and Si daughter nuclei as well as shedding light on the isomer in 34Al.

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