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High Purity Germanium Detectors and Angular Distribution of 2Al(p,g)28Si ANDRE WILSON, None — The purpose of this research was to study high purity germanium detector systems, and to calculate and compare absorption ratios of 27Al(p,g)28Si. Work with the germanium detector online array for gamma ray spectroscopy in nuclear astrophysics in the Nuclear Science Laboratory at the University of Notre Dame, also known as Georgina, including energy calibrations and work with software and hardware logic, provided the necessary background and experience with high purity germanium detectors and angular distribution of gamma rays. The knowledge taken from work with the Georgina detectors was then applied to the analysis of 27Al(p,g)28Si. Previous experimental data of 27Al(p,g)28Si was analyzed using the Ep = 1778.9 keV resonance. The data used was taken from a 2010 experiment completed in the Nuclear Science Laboratory at the University of Notre Dame using the 4MV KN particle accelerator. A 1977 paper by A. Anttila and J. Keinonen with analysis of the same reaction using the Ep= 992 keV resonance was used for the energy calibration and gamma energies. Peak fitting and background reduction of the spectra were completed using analysis software, jtek. Angular distribution ratios from a 56Co source were used for the normalization of the 27Al data. Angular dependent absorption factors were used to analyze the angular distribution of γ-rays from the 27Al beam target. With these absorption factors, relative gamma intensity measurements of 27Al(p,g)28Si were calculated.

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