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Light Collection Efficiency in Thin Strip Plastic Scintillator for the Study of ISGMR in Unstable Nuclei[1] JACOB SHAFER, Texas A&M University Cyclotron Institute — The compressibility of nuclear matter (K_A) is one of the constituent of the equation of state for nuclear matter which is important in the study Neutron Stars and Super Novae. The K_A is proportional to the Giant Monopole Resonance (GMR) energy and is related by the equation $E_{GMR}=(h^2/mr^2)^{1/2} *(AK_A)^{1/2}$, where "m" is the mass of a nucleon and "r" is the radius of the nucleus. The GMR in unstable nuclei is important because the K_A is related to the ratio of protons to neutrons. For this reason, it is desirable to study unstable nuclei as well as stable nuclei. The study of the GMR in unstable nuclei will be done using inverse kinematics on a target of Lithium (^{6}Li). A detector composed of two layers of thin strip scintillators and one layer of large block scintillators has been designed and constructed to give adequate energy and angular distribution over a large portion of the solid angle where decay particles from the ISGMR can be found. Attenuation of the light signal in the strip scintillators was measured using an Americium (^{241}Am) alpha source. Gains in light collection efficiency due to various wrapping techniques were also measured. The thin strip scintillators are connected to the photomultiplier tube (PMT) via bundles of optical fiber. Losses in light calculation efficiency due to fiber bundles were measured as well.

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