Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

**Characterizing Properties and Performance of 3D Printed Plastic Scintillators**[1] JACOB MCCORMICK, The College of William and Mary — We are determining various characteristics of the performance of 3D printed scintillators. A scintillator luminesces when an energetic particle raises electrons to an excited state by depositing some of its energy in the atom. When these excited electrons fall back down to their stable states, they emit the excess energy as light. We have characterized the transmission spectrum, emission spectrum, and relative intensity of light produced by 3D printed scintillators. We are also determining mechanical properties such as tensile strength and compressibility, and the refractive index. The emission and transmission spectra were measured using a monochromator. By observing the transmission spectrum, we can see which optical wavelengths are absorbed by the scintillator. This is then used to correct the emission spectrum, since this absorption is present in the emission spectrum. Using photomultiplier tubes in conjunction with integration hardware (QDC) to measure the intensity of light emitted by 3D printed scintillators, we compare with commercial plastic scintillators. We are using the characterizations to determine if 3D printed scintillators are a viable alternative to commercial scintillators for use at Jefferson Lab in nuclear and accelerated physics detectors.

[1]I would like to thank Wouter Deconinck, as well as the Parity group at the College of William and Mary for all advice and assistance with my research.

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Date submitted: 30 Jul 2015 Electronic form version 1.4