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# Radiation Damage Studies on Plastic Scintillators Using a $^{137}\text{Cs}$ Gamma Ray Source

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Particle physics experiments like those at the LHC and future colliders need radiation-resistant scintillators more than ever due to increasing instantaneous luminosity resulting in unprecedented radiation conditions. In this context, we have studied several polyethylene-based and quartz-based scintillating materials. The organic scintillators, polyethylene naphthalate (PEN) and polyethylene terephthalate (PET) are bright and inexpensive plastic scintillators. The radiation resistance of PEN and PET has been tested using stimulated emission from a 334nm wavelength UV laser with PMTs before and after radiation exposure to a  $^{137}\text{Cs}$  Gamma source. The scintillation timing performance of the samples were also studied in beam tests at the Fermilab Test Beam Facility (FTBF). Here we discuss the physics motivation, recent developments, and test beam measurements of radiation hard scintillating materials.

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