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Wavelength Shifting Efficiency of Tetraphenyl Butadiene (TPB) at Extreme Ultraviolet Wavelengths CHRISTOPHER BENSON, GABRIEL OREBI GANN, University of California, Berkeley, VICTOR GEHMAN, Lawrence Berkeley National Lab — Tetraphenyl Butadiene (TPB) is a commonly used wavelength shifter (WLS) in neutrino and dark matter liquid noble gas scintillator detectors. Thin films of wavelength shifters are used to shift ultraviolet scintillation light into the visible spectrum for event reconstruction. The wavelength shifting efficiency of TPB is a function of the incident ultraviolet photon wavelength and is an important parameter for detector design, simulation and reconstruction. The wavelength shifting efficiency and emission spectrum has been previously measured down to 120 nm [Gehman et. al., 2011]. To build liquid noble gas scintillator detectors with lighter elements (Ne, He) that use TPB as a WLS medium, the wavelength shifting efficiency must be known closer to 80 nm. This talk will present the current status and preliminary results from a set of measurements that will improve the precision of the efficiency of 120nm, and extend the data to wavelengths as low as 45nm.

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