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Performance of UV-glass MaPMT with p-Terphenyl Wavelength Shifter MELANIE REHFUSS, SYLVESTER JOOSTEN, ZEIN-EDDINE MEZIANI, EDWARD KACZANOWICZ, Temple University — UV-glass PMTs are often the limiting factor in a Cherenkov detector because of their poor quantum efficiency (QE) below 300nm due to the UV-glass transparency. The application of a p-Terphenyl wavelength shifter to the face of these PMTs dramatically improves the QE for short wavelengths, rivaling that of a much more expensive quartz PMT. This is especially interesting in the context of multi-anode (Ma) PMTs, which are supremely suited for application in future open-environment Cherenkov detectors at very high luminosities due to their small size, lower sensitivity to magnetic fields, and high potential for advanced background rejection due to their pixelization. This will become critical at Jefferson Lab entering the 12 GeV era, as well as for a future electron-ion collider both providing a high luminosity. We will discuss the process of coating the PMTs through vacuum evaporation, and the performance testing taking place at Temple University for Hamamatsu model H12700A-03 multi-anode PMTs as well the background rejection schemes that will be devised using these MaPMTs.

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