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Organic Thin Film Deposition System for DEAP-3600

Wednesday 18 June 2014 14:00 (15 minutes)

DEAP-3600 is a single phase liquid argon dark matter detector. Particle interactions in liquid argon produce light at a peak wavelength of 128nm, which is below the wavelength range of efficient detection with photomultiplier tubes. To shift the light to the region of peak PMT efficiency, the inner surface of the acrylic vessel is coated with tetraphenyl butadiene, an organic wavelength shifter, which re-emits the absorbed 128nm gamma at a new peak value of 430nm. The coating is applied through vacuum deposition using a spherical evaporation source lowered into the detector prior to filling with liquid argon. Deployment and evaporation systems, in-situ thickness measurements of the applied coating, and simulated coating uniformity will be discussed in this talk.

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