DEAP-3600 Work Term

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What is Dark Matter?

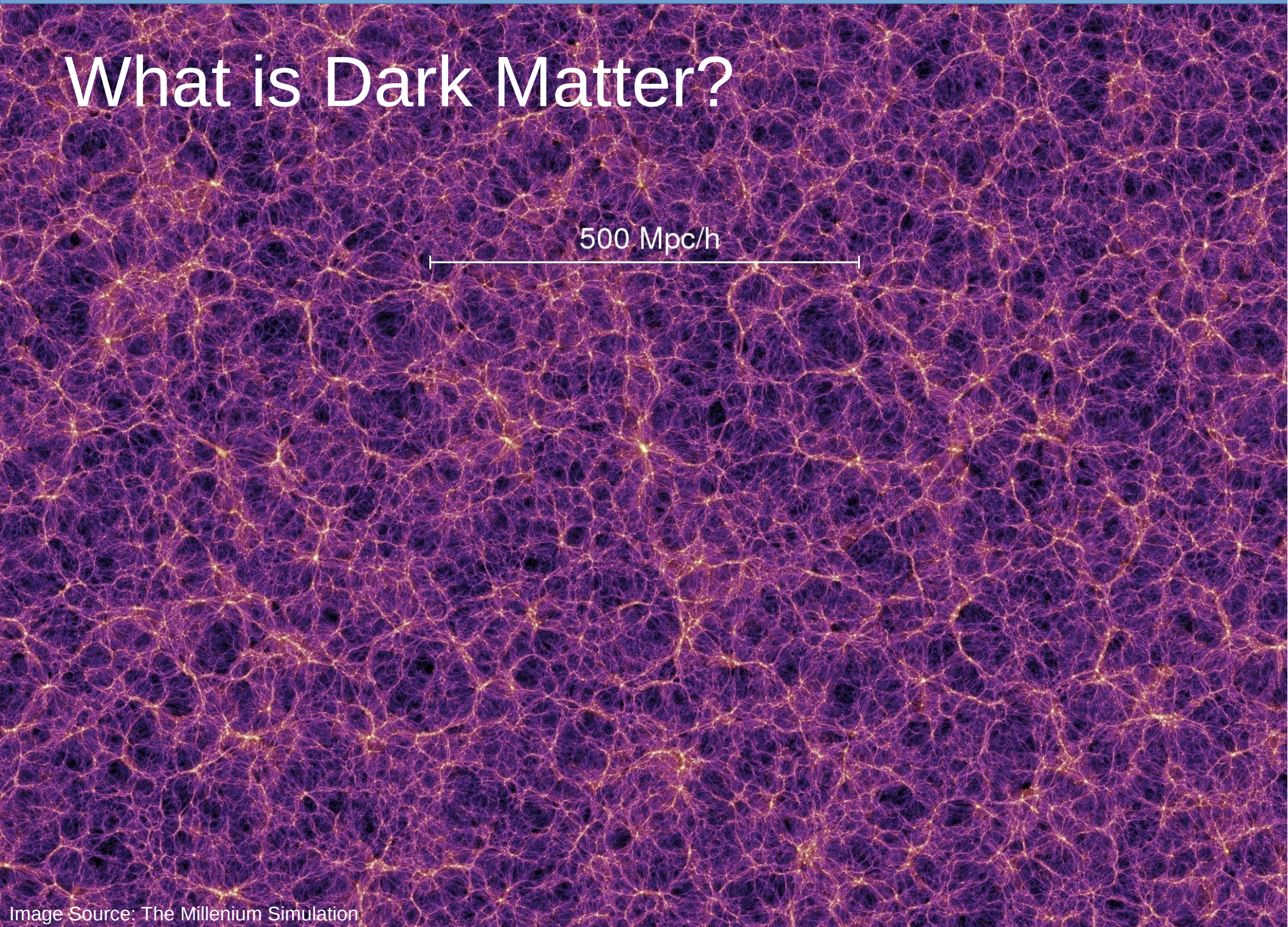
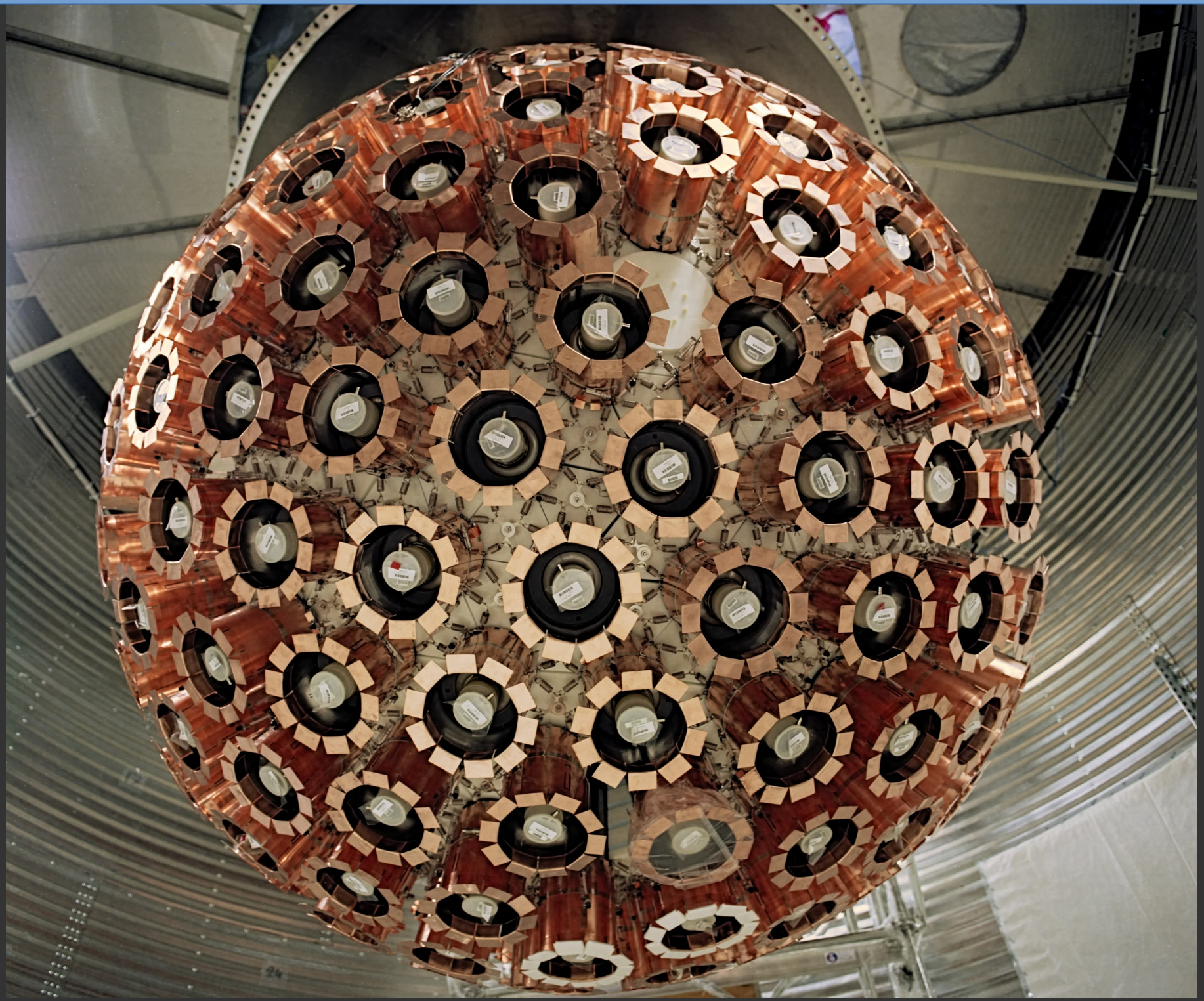
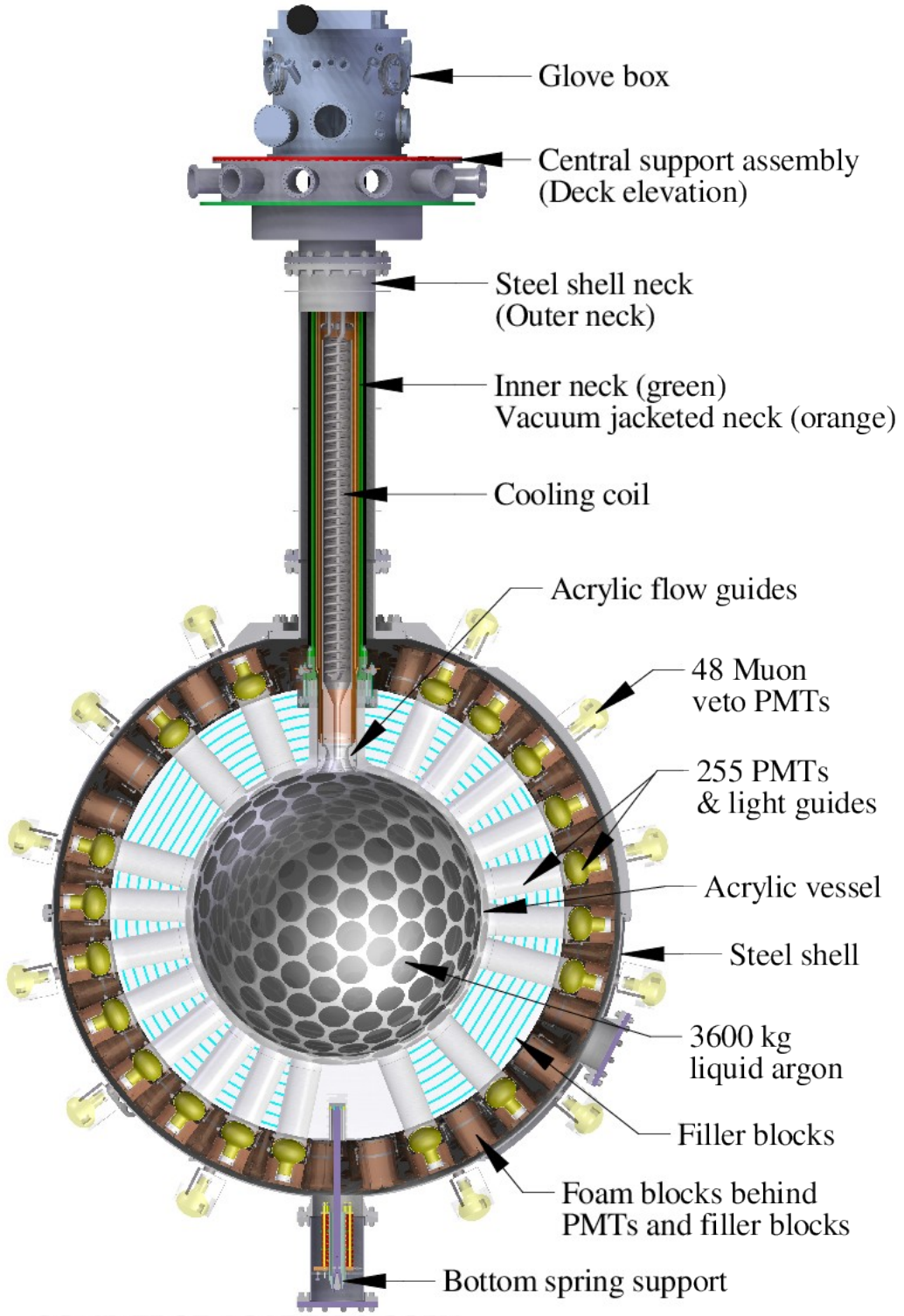


Image Source: The Millenium Simulation



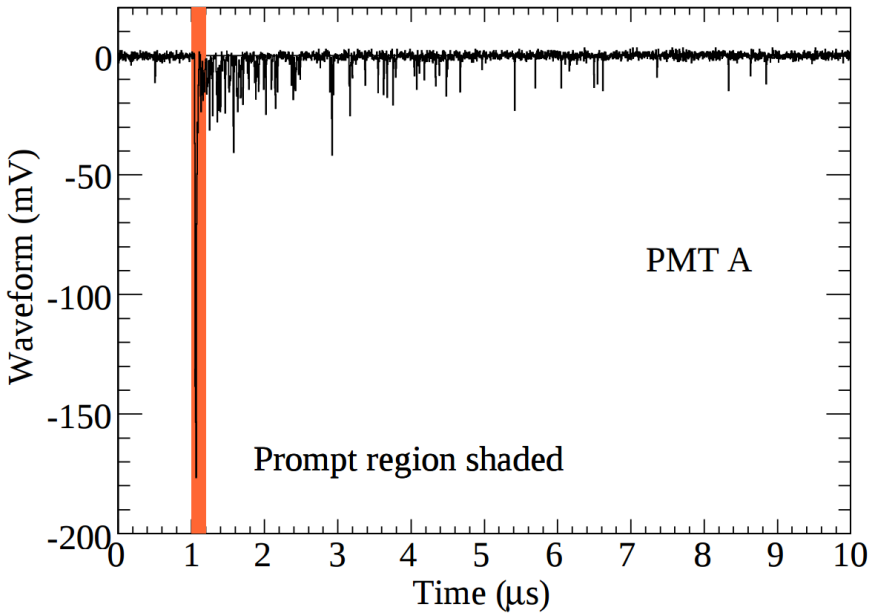
The DEAP-3600 Detector

Image Source: http://lampes-et-tubes.info/pm/pm045.php?l=e



DEAP-3600 uses pulse-shaped discrimination

Nuclear Recoil Events



Electronic Events

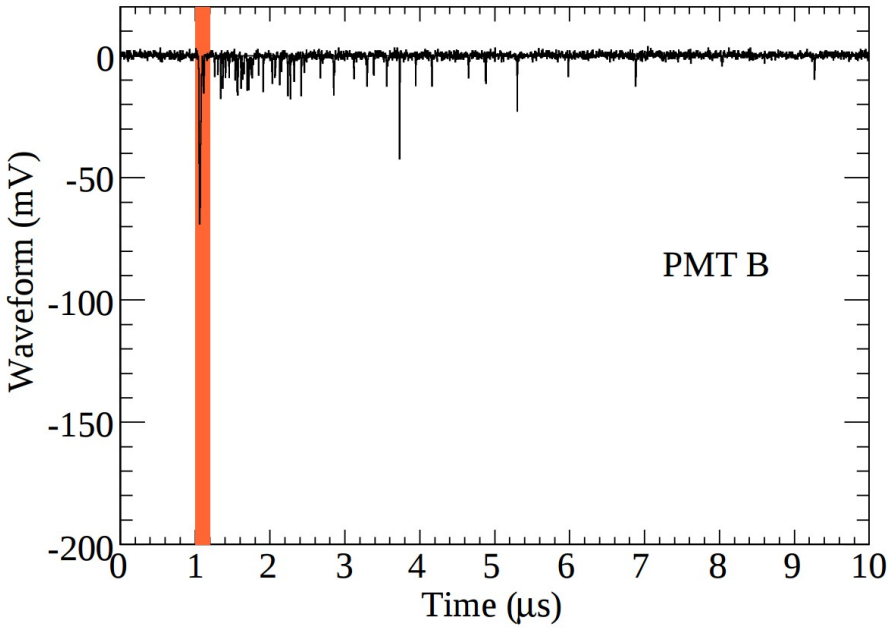


Image source: Measurement of the scintillation time spectra and pulse-shape discrimination of low-energy beta and nuclear recoils in liquid argon with DEAP-1

We care about many small effects on the time structure

- Dark Noise
- Afterpulsing

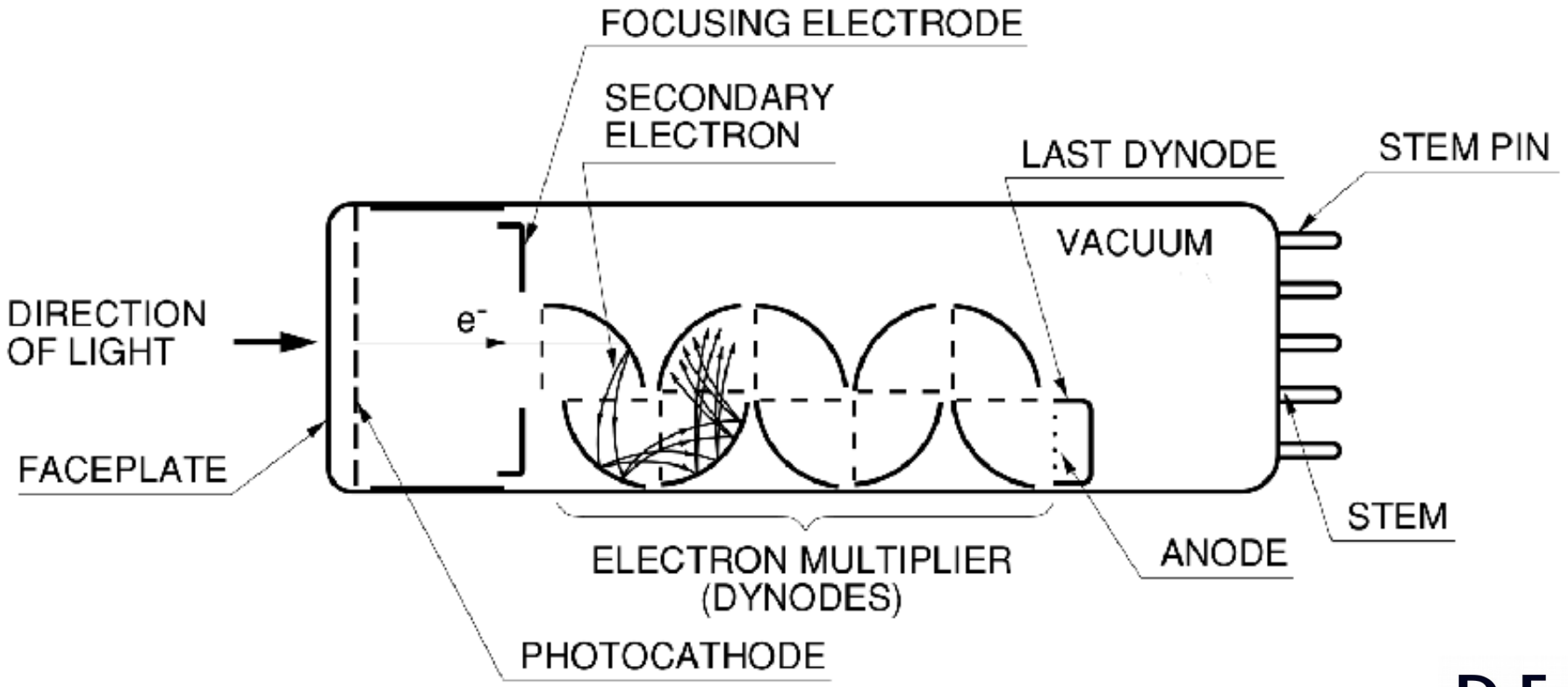
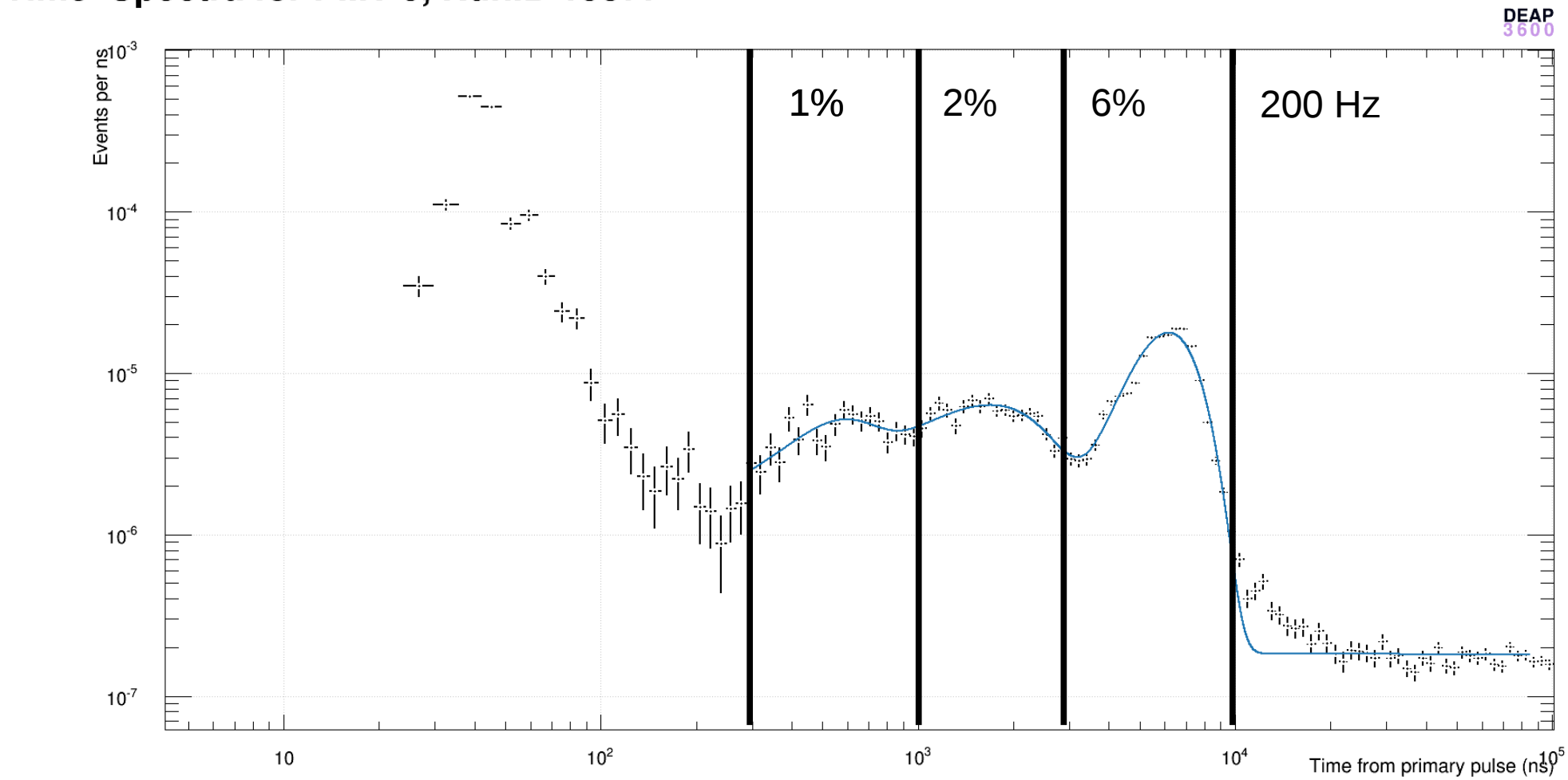
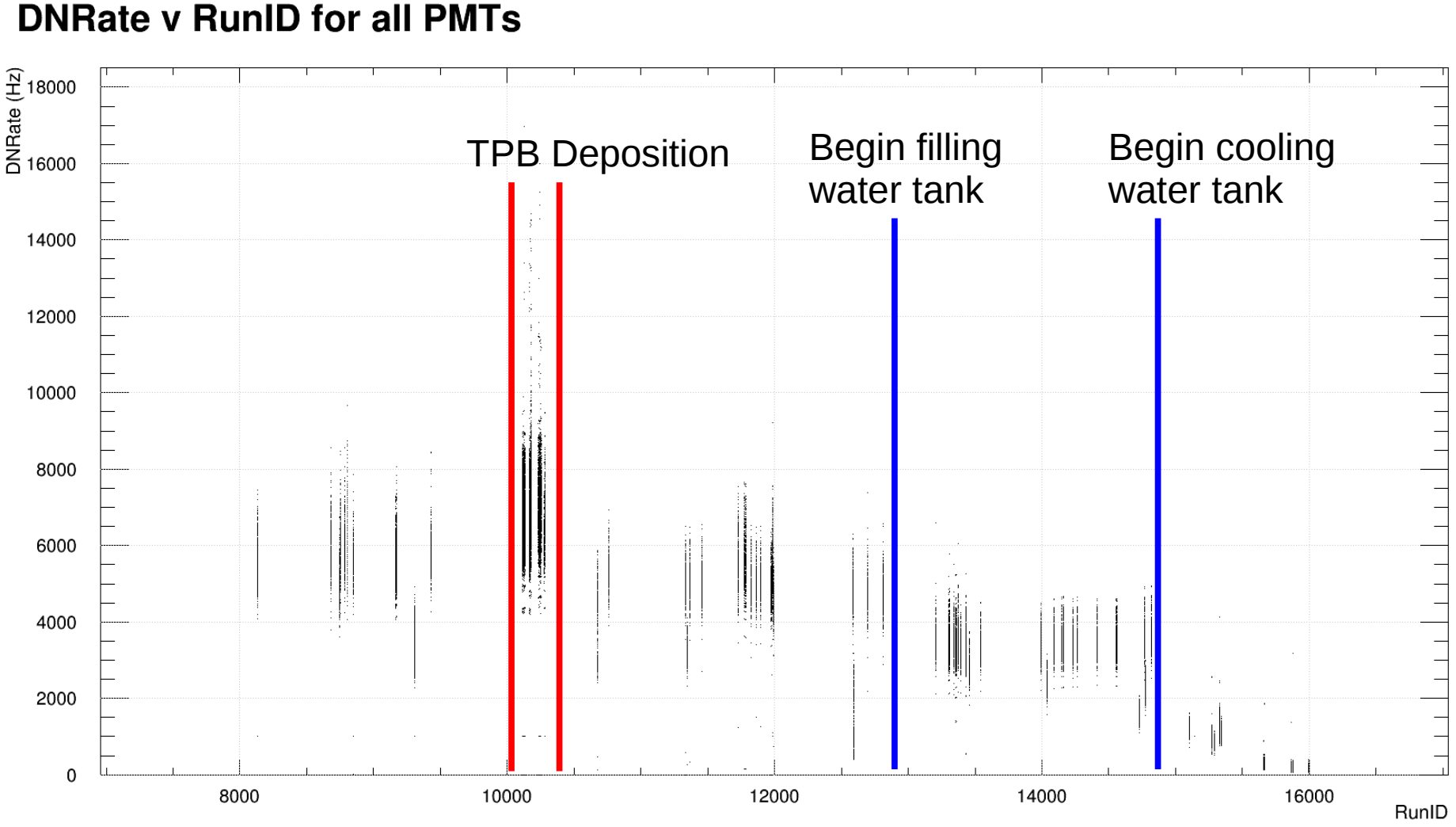


Image Source: Hamamatsu photonics

Afterpulsing



Dark Noise Rates



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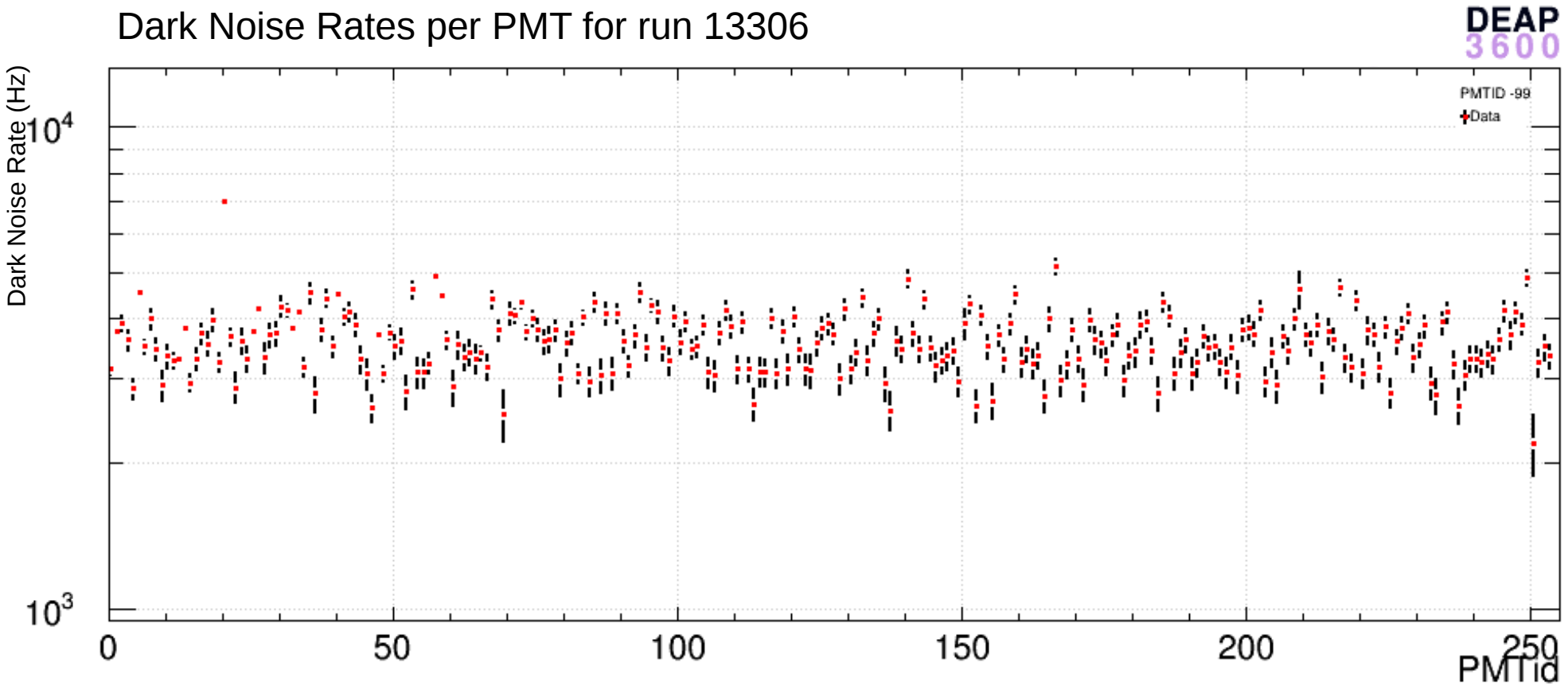
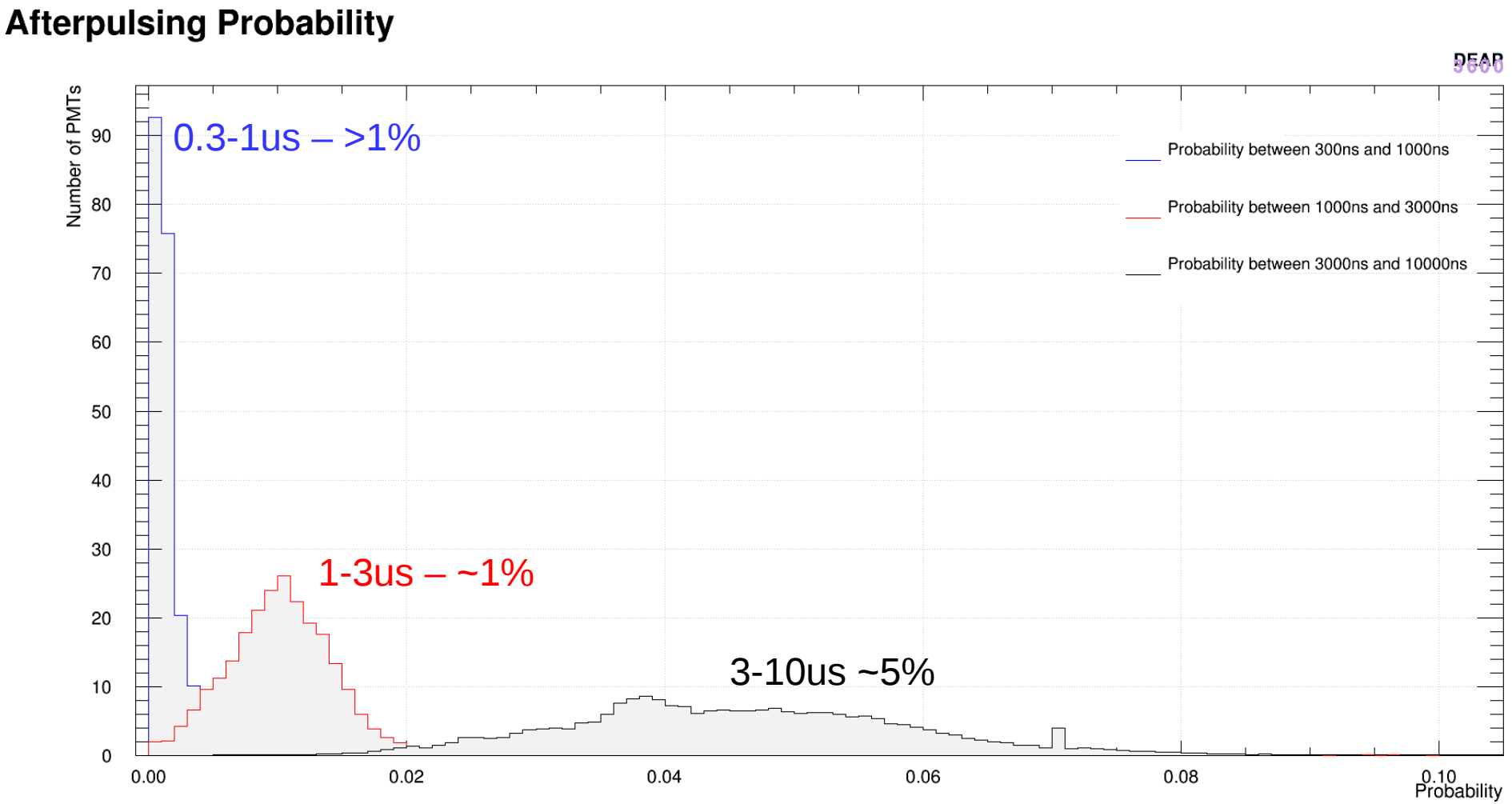
Dark Noise Rates



Afterpulsing Probabilities



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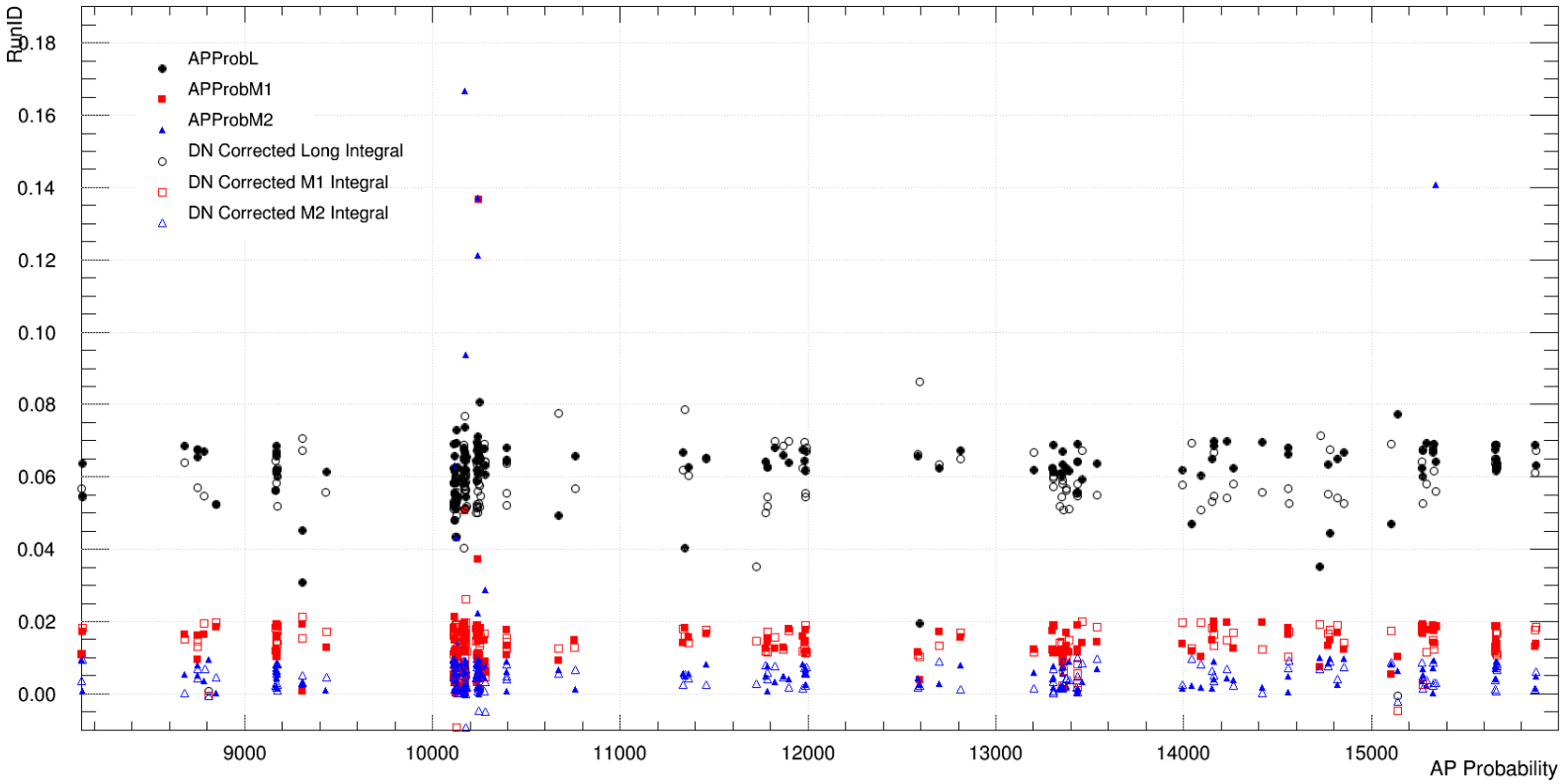
Afterpulsing Probabilities are stable

After Pulsing Probability Trends for PMT 0



3-10us

1-3us

0.3-1us

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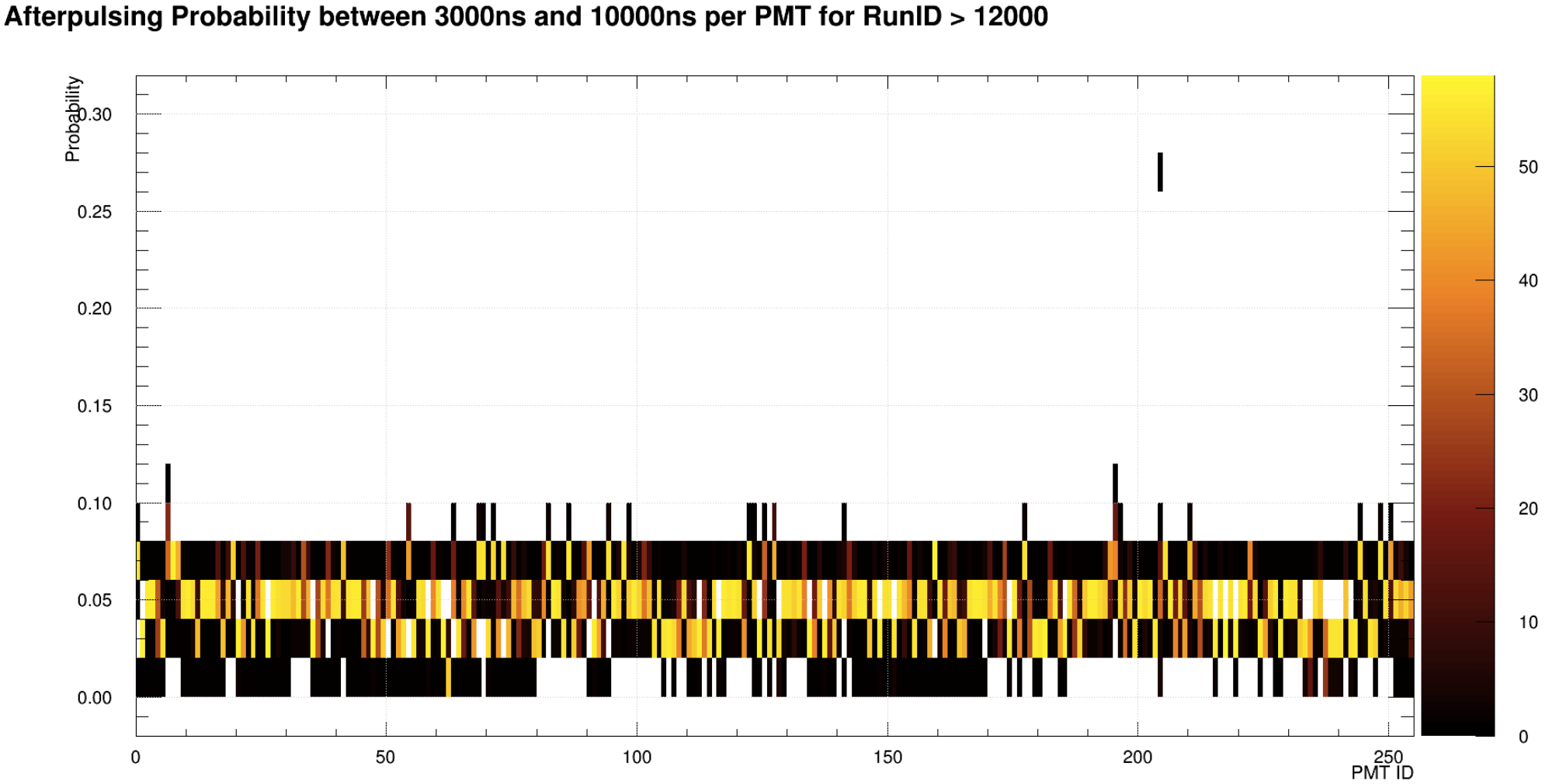
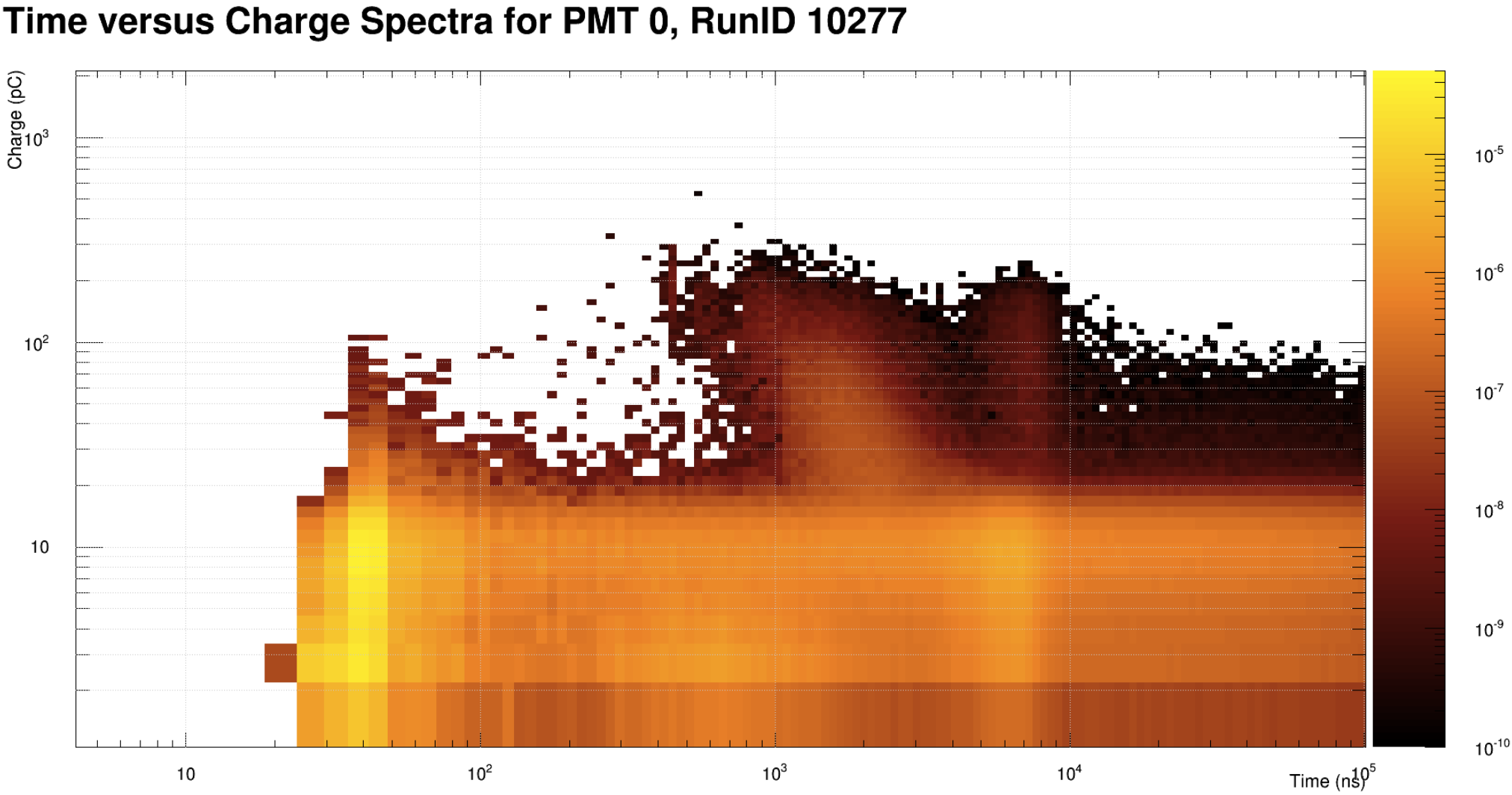
They're also constant across PMTs



Results



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