



Status of WATCHMAN Calibration Requirements Study

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WARWICK
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Light Injection System for WATCHMAN Calibration

Based on a system designed for Hyper-K and installed in Super-K

Optical system may be used for:

- Gain

- Timing

- Monitoring target medium optical properties

- Reflections

Real time monitoring as well as data for offline analysis

What are WATCHMAN Requirements?

WATCHMAN is different to Hyper-K and Super-K

- Research goals

- Tank size

- Maybe WBLS?

May lead to different optimisations for the optical calibration system:

- Number and placement of sources,

- Absolute light levels injected,

- Timing and spatial light profile of sources

Analysis Plan

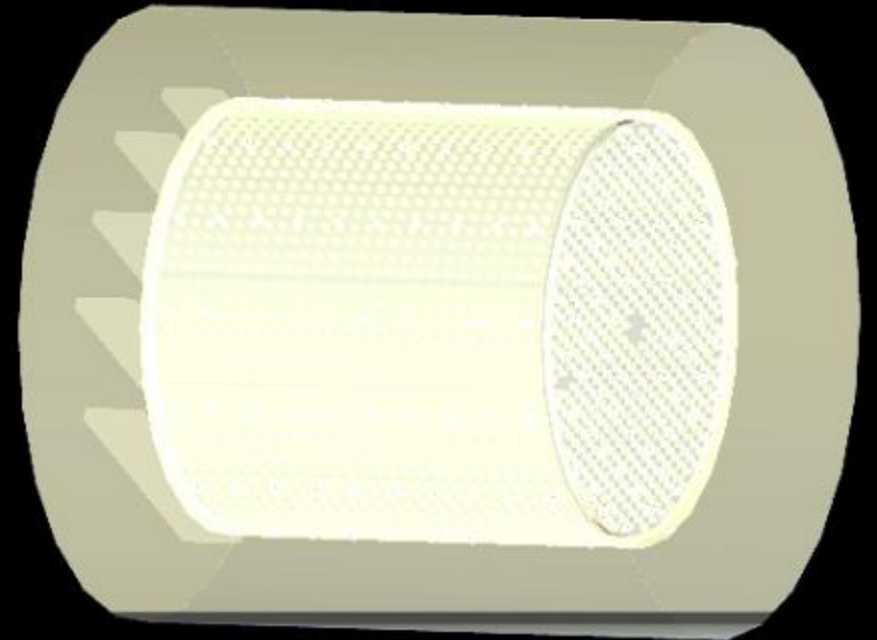
Aim: Study the impact of optical properties of the medium on systematic uncertainties for WATCHMAN analysis

Plan:

- Simulate WATCHMAN with varied water properties
- Evaluate the impact on the reconstruction
- Run the standard WATCHMAN sensitivity analysis on these data sets
- Derive target precision on water properties required to meet WATCHMAN sensitivity goals
- Feed these requirements back into calibration system design

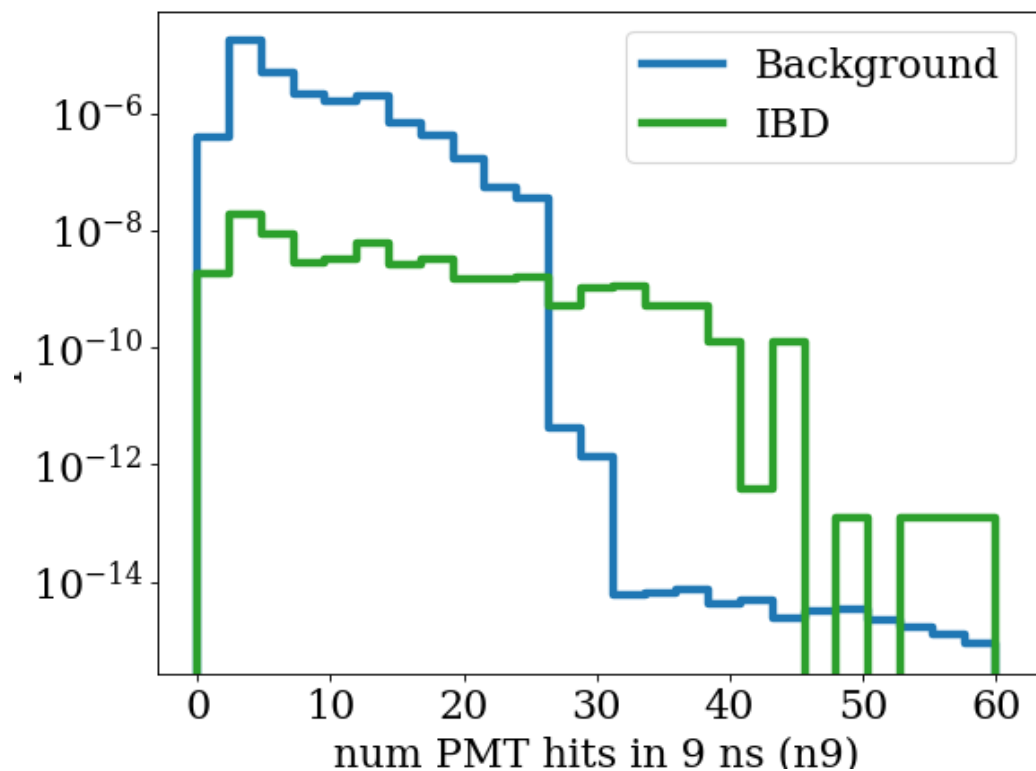
Recent Activity

Spending a lot of time getting to grips with the WATCHMAN software stack...

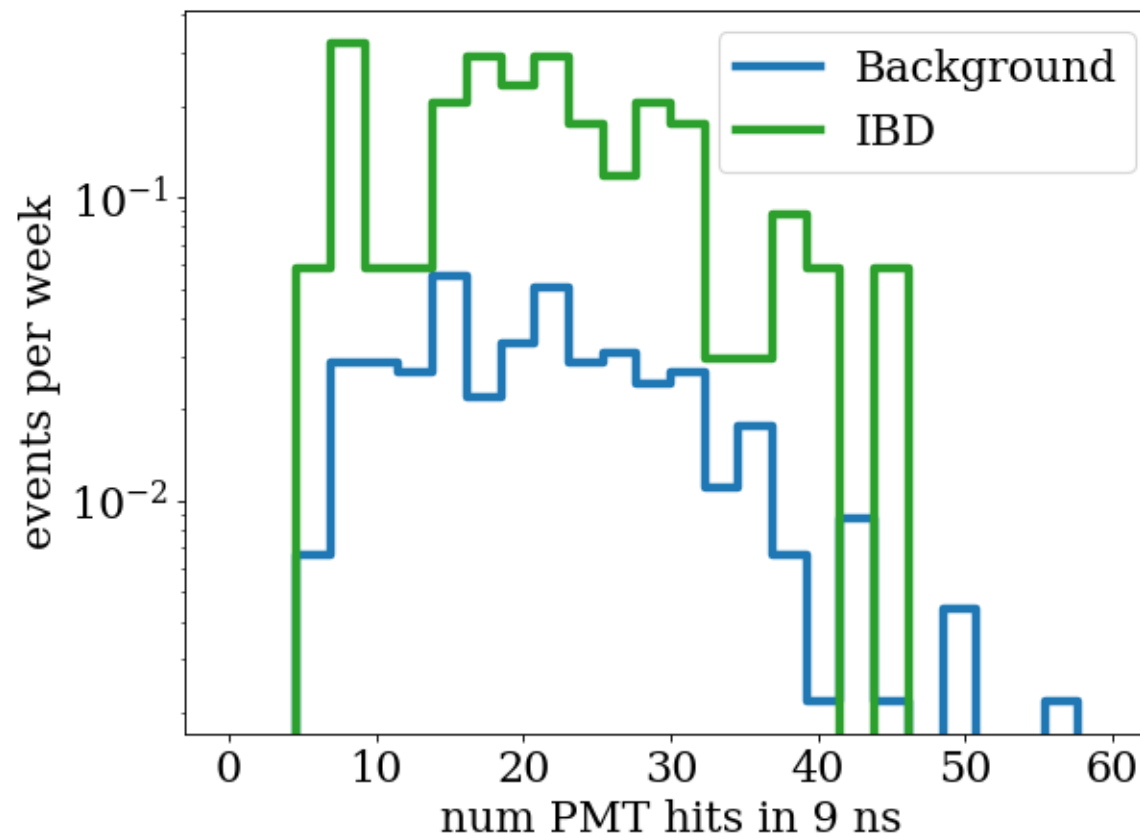


Fixed Issue with excessive backgrounds reported in a previous simulation meeting

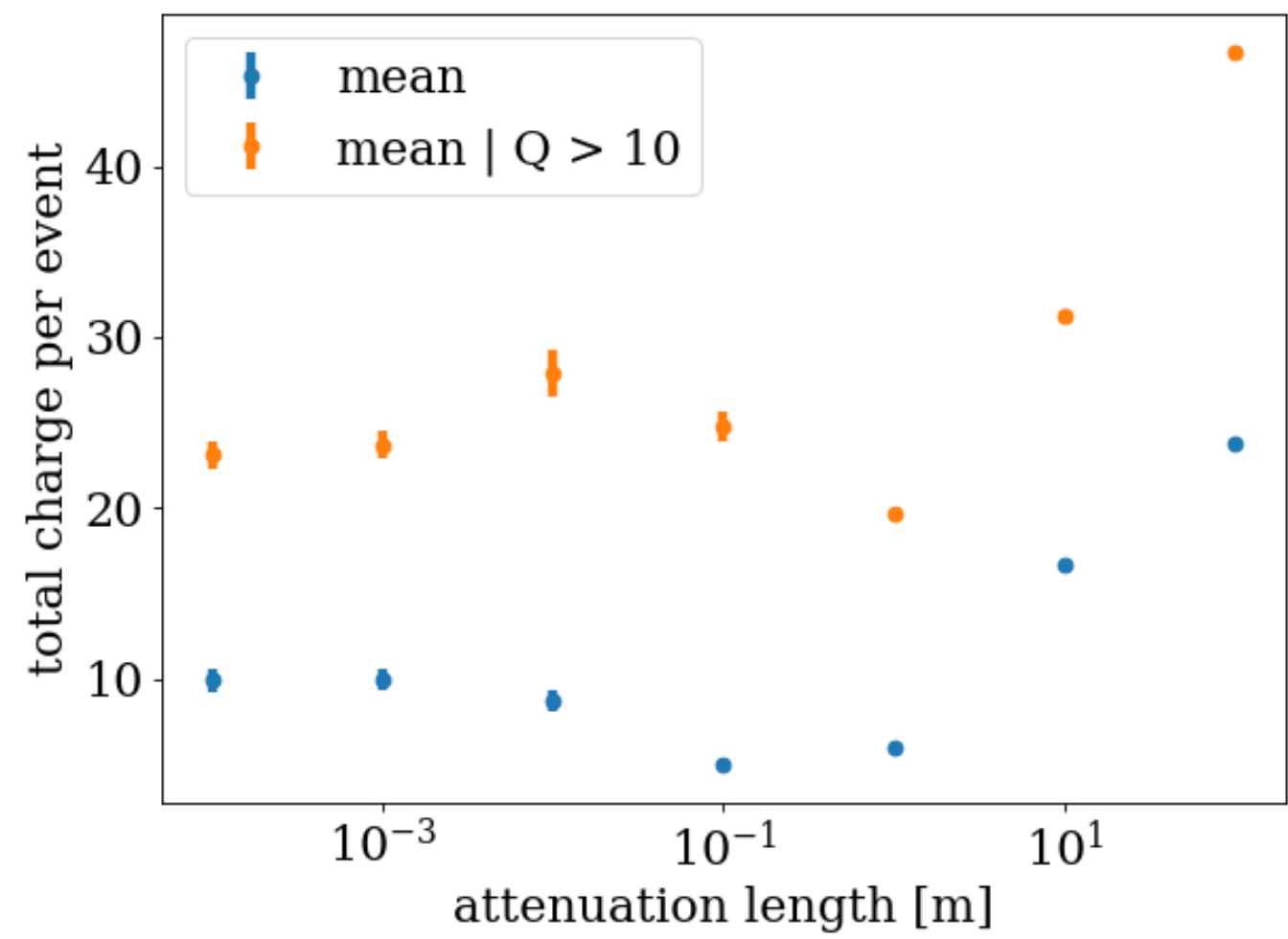
Previous Result



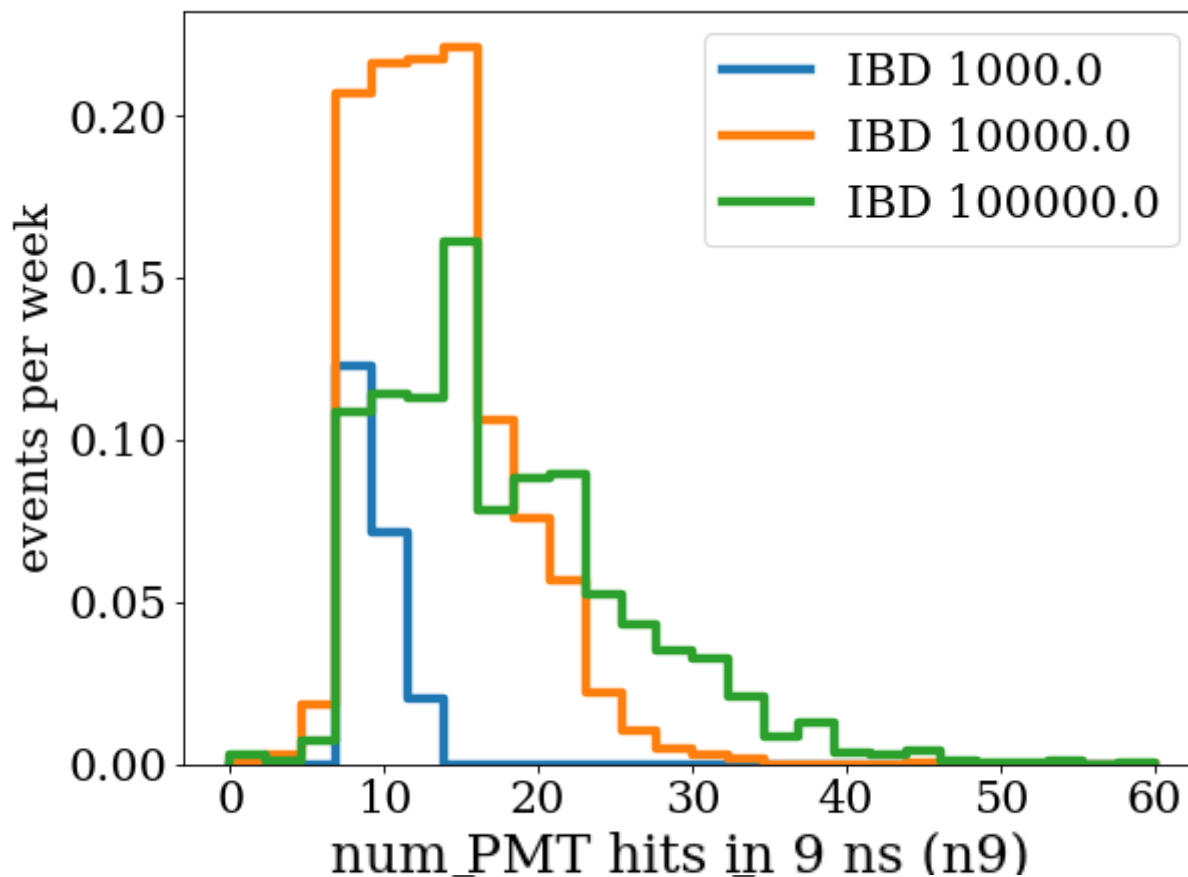
New Result



Demonstration of Successfully Modifying Monte Carlo Water Parameters



Evaluation of the Impact of Water Properties on Reconstruction is in Progress



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Backup