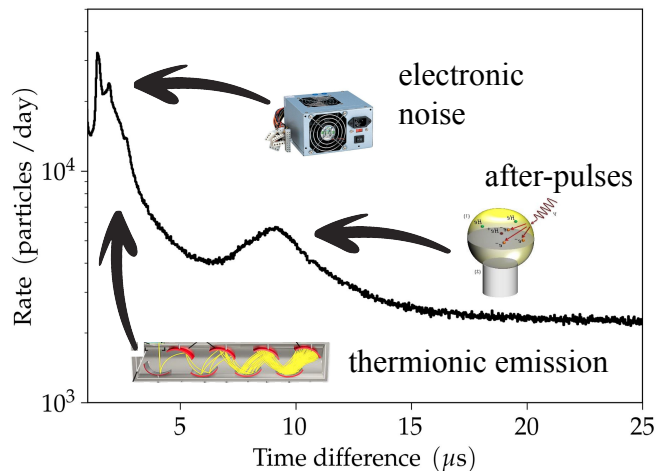


# Measurement of the Muon Lifetime and the Michel Spectrum in the LAGO Water Cherenkov Detectors as a tool to improve energy calibration and to enhance the signal-to-noise ratio

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for the LAGO Collaboration<sup>7</sup>

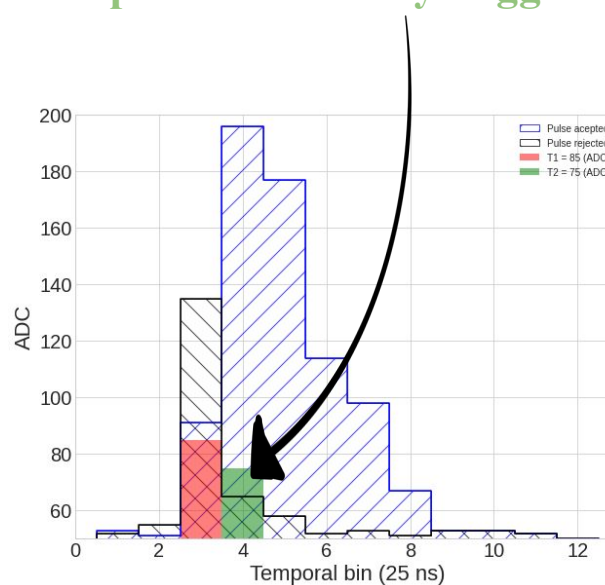
Time difference between two consecutive pulses histogram



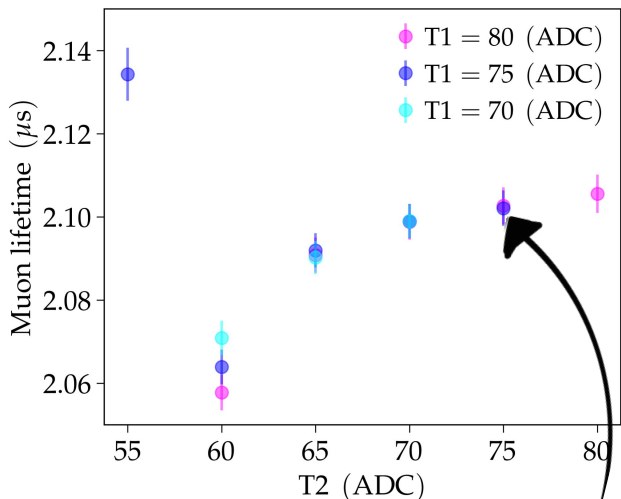
Noises in WCD are clearly visible  
Short pulse width ~ ns

Noise Rejecting strategy

Impose a secondary trigger

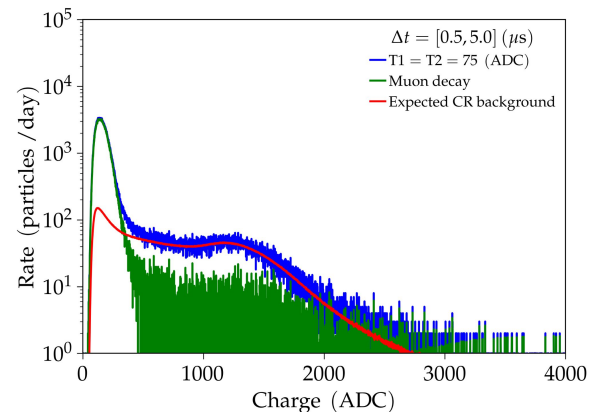
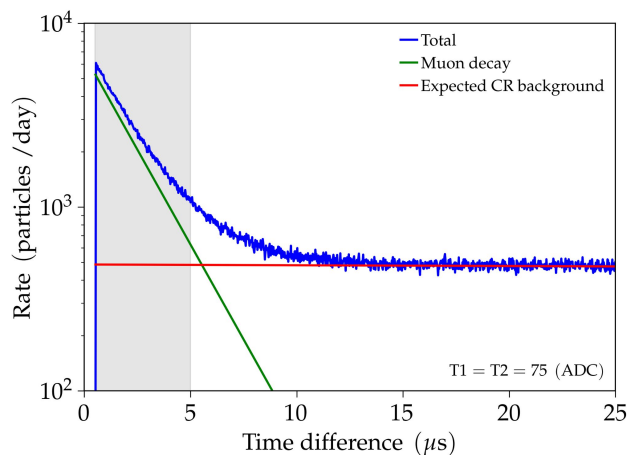


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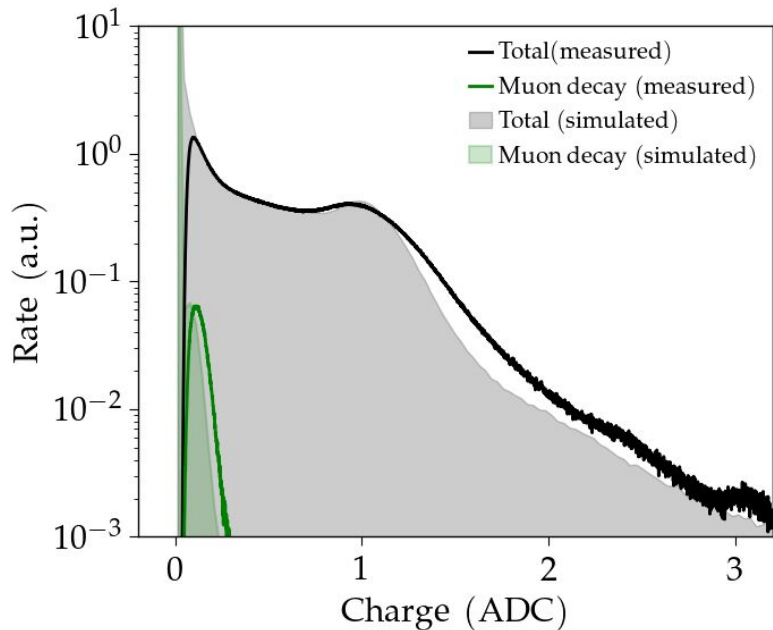
We look for stable value of muon lifetime measure from time spectrum

>90% of muon decay events are present in the 0.5-5  $\mu\text{s}$  band of the time between consecutive pulses histogram



Michel spectrum is obtained from this band after background correction

# Measurement of the Muon Lifetime and the Michel Spectrum in the LAGO Water Cherenkov Detectors as a tool to improve energy calibration and to enhance the signal-to-noise ratio



**Good agreement with simulations**

**This process is being used for correcting operative datasets of LAGO WCDs**

