

# Measurement of the Neutron Travel Time Distribution Inside a Neutron Monitor

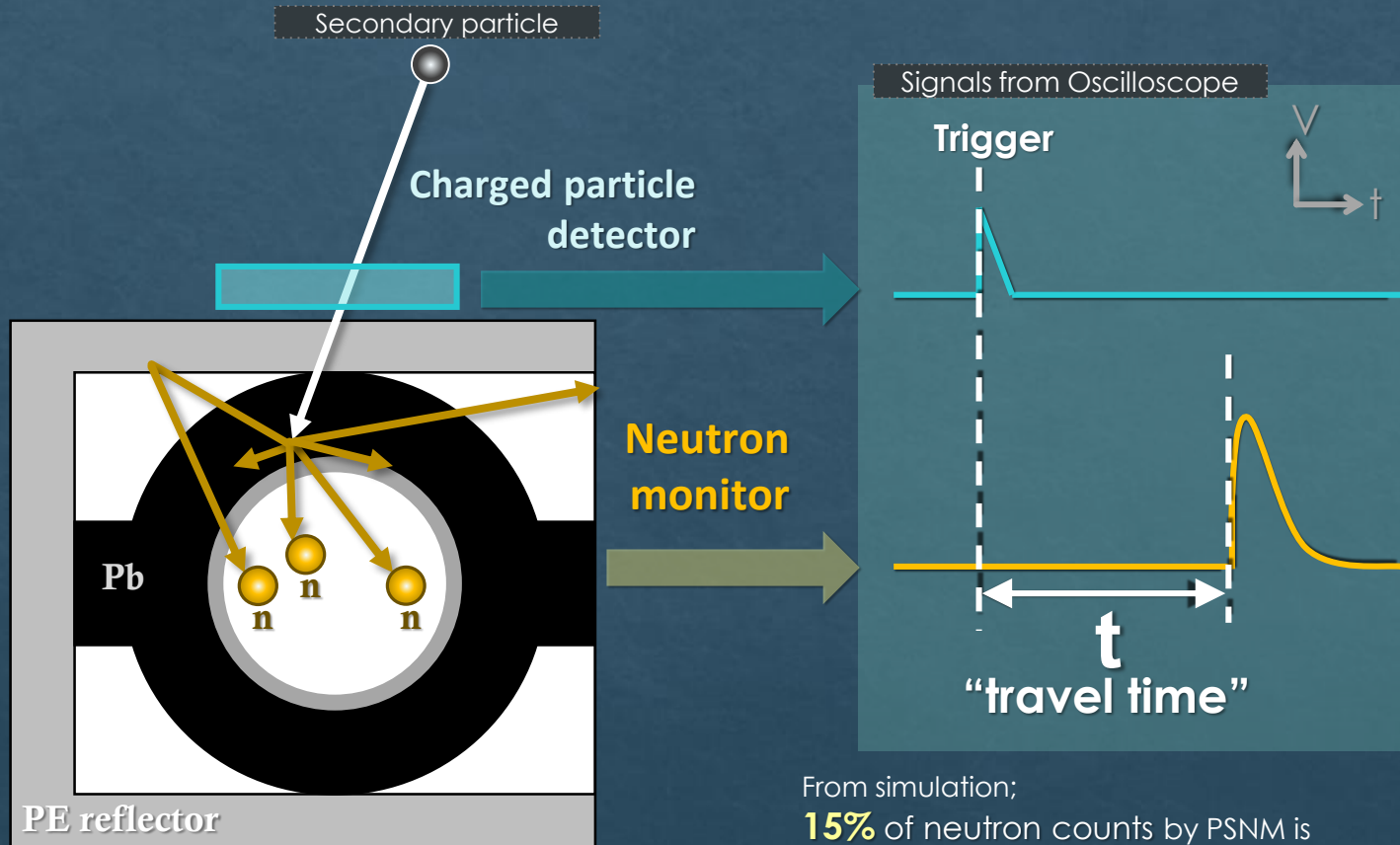
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C. Banglieng<sup>d</sup>, E. Kittiya<sup>e</sup>, W. Nuntiyakul<sup>e</sup>, U. Tippawan<sup>e</sup>, M. Jitpukdee<sup>f</sup>, S. Aukkaravittayapun<sup>g</sup>

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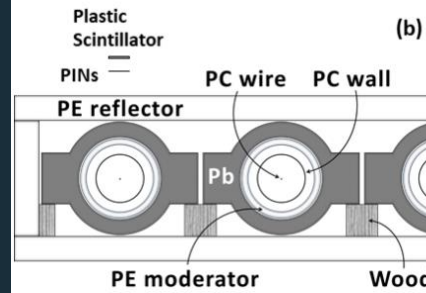
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From simulation;  
**15%** of neutron counts by PSNM is

**Proton**

## Experiment



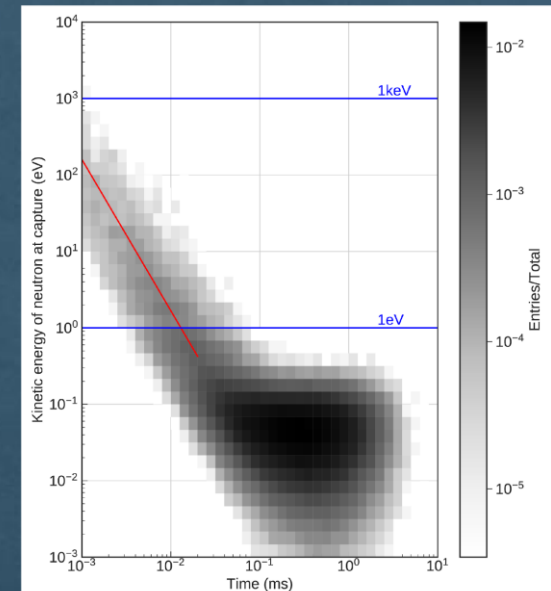
## Simulation

**Fluka**  
 (4-1.1)  
 &  
**EXPACS**  
 (4.09)

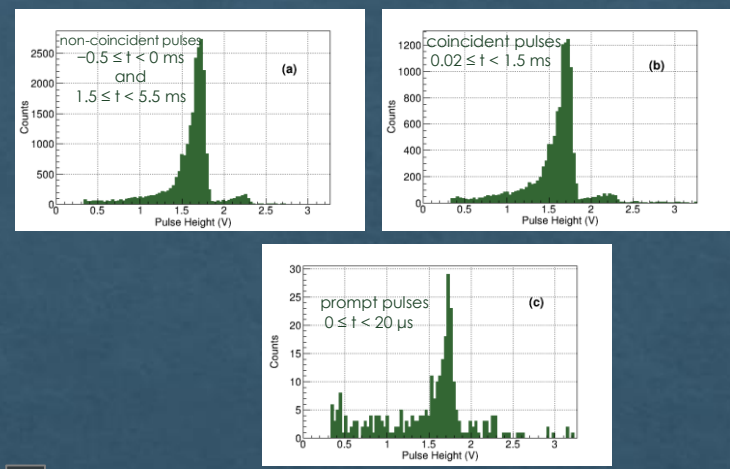


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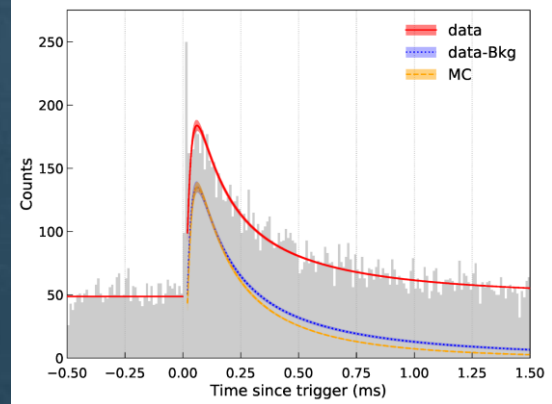
Prompt NM Pulses and Multiplicity



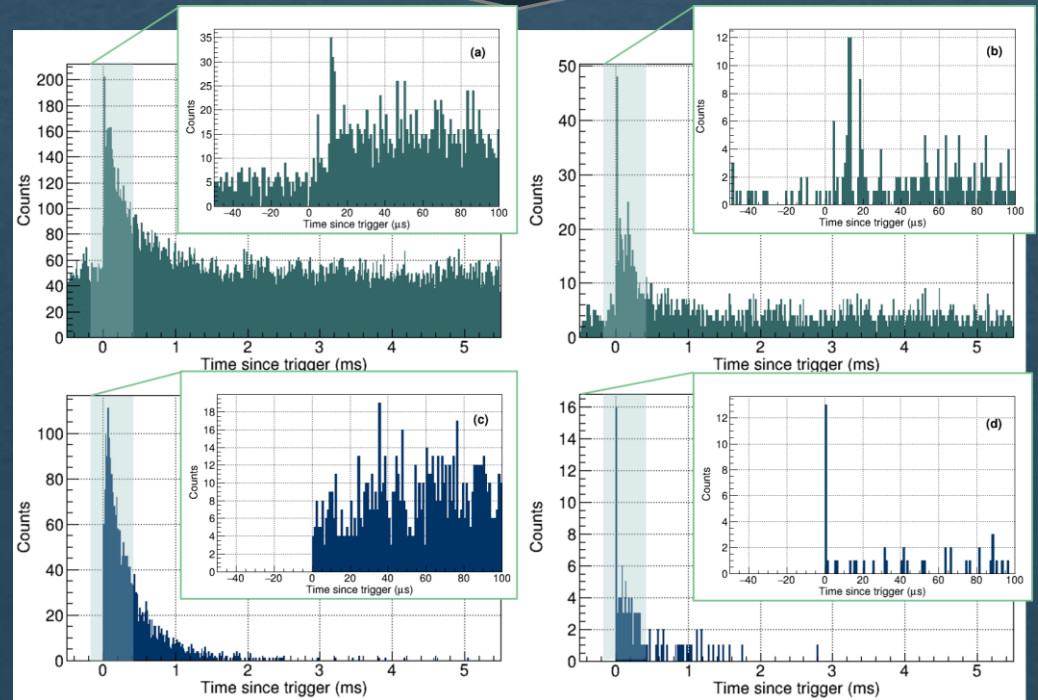
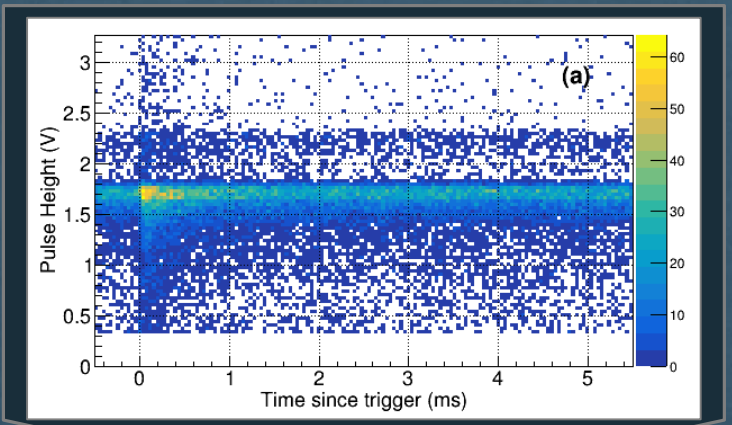
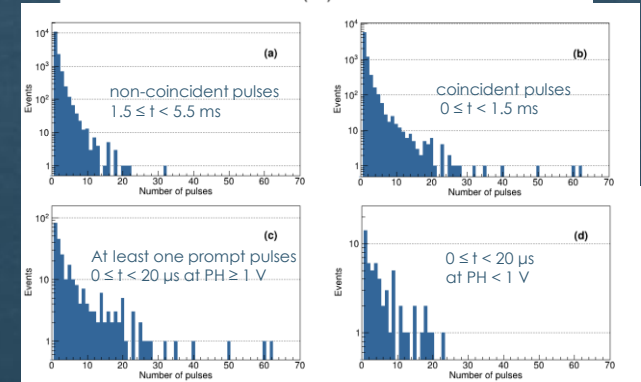
Time-Selected NM Pulse Height Distributions



Diffusion-Absorption Model



$$n \propto \frac{1}{t} \exp\left(-\frac{x^2 + y^2}{4Dt}\right) \exp(-\alpha t)$$



Experiment

Simulation

Pulse height ≥ 1 V

0.362V ≥ Pulse height > 1



# Measurement of the Neutron Travel Time Distribution Inside a Neutron Monitor

“#430 kullapha”

Full paper



ICRC 2021

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Kullapha Chaiwongkhot  
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Kullapha Chaiwongkhot  
Mahidol University

Discussion timeslot (ZOOM-Meeting): 15. July 2021 - 18:00ZOOM-Meeting URL:  
[https://icrc2021.desy.de/pl\\_access\\_abstracts/Corresponding Session: https://icrc2021-venue.desy.de/channel/Presenter-Forum-1-Evening-All-Categories/48Abstract/Using%20a%20setup%20for%20testing%20a%20prototype%20for%20a%20satellite-borne%20cosmic-ray%20ion%20detector,%20we%20have%20operated%20a%20stack%20of%20scintillator%20and%20silicon%20detectors%20on%20top%20of%20the%20Princess%20Sirindhorn%20Neutron%20Monitor%20\(PSNM\),%20an%2018-counter%20NM64%20detector%20at%202560-m%20altitude%20at%20Doi%20Inthanon,%20Thailand.%20Monte%20Carlo%20simulations%20have%20indicated%20that%20about%2015%20of%20the%20neutron%20counts%20by%20PSNM%20are%20due%20to%20interactions%20\(mostly%20in%20the%20lead%20producer\)%20of%20GeV-range%20protons](https://icrc2021.desy.de/pl_access_abstracts/Corresponding%20Session)

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Plenary 01

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