# 24th IEEE Real Time Conference - ICISE, Quy Nhon, Vietnam



Contribution ID: 44

Type: Poster presentation

# An investigation of a stilbene organic scintillator for fast neutron detection at Acculinna-2

Tuesday 23 April 2024 12:35 (20 minutes)

For the demand of studying a set of resonant states of several neutron-rich nuclei (6H, 7H, 7He, 10Li, ...) lately at ACCULINNA-2 [1], a neutron spectrometer based on stilbene crystals coupling with 3"ET-Enterprise 9822B photomultipliers [2] has been crucially developed and routinely employed in our work. This is to tag principally the reaction channels and practically explore the nuclear structure of light isotopes beyond the limit of  $\beta$ -stability. Nonetheless, the detailed characteristics and properties of stilbene scintillator have not been completely studied and well-understood owing to its intricate response by light output anisotropy with reference to the crystalline structure itself. In this work, we aim at determining the light output responses for electrons and charged ions, having the same initial energy but generating different behaviors when they stop in an organic scintillator. In accordance with the detector performance, energy dependence of time resolution and neutron-gamma discrimination (NGD) of stilbene will be evaluated at different ranges of energy. Also the neutron detection efficiency of stilbene employing monoenergetic fast neutron beam, originated by a continuous neutron flux generator ING-27 [3] in the Frank Laboratory of Neutron Physics, will be investigated as well.

#### Minioral

Yes

## **IEEE Member**

No

### Are you a student?

Yes

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#### Session Classification: Poster A

Track Classification: Data Acquisition and Trigger Architectures