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A Timepix3 front-end simulator plugin for Allpix2

Tuesday 23 May 2023 13:00 (25 minutes)

The talk will present the latest implementation of the Timepix3 front-end simulator. The front-end electronics channel is modelled using an integrator stage and parallel low-pass filtered feedback loops with individually configurable time constants. The system noise is implemented using independent bandwidth limited noise channels for pre-amplifier, feedback and threshold noise. The Timepix3 time of arrival (ToA) and time over threshold (ToT) measurement is computed using a discriminator model with independent rise and fall time constants and separate clock frequencies for the ToA and ToT time-stamping. The measured dependence of the ToT on the pre-amplifier input charge using test-pulses of a Timepix3 assembly is correctly reproduced by this model for a wide range of discriminator threshold settings. Simulated data will be compared to measurements using radioactive sources. The model does however not cover all aspects of the Timepix3 front-end and its limitations will be discussed.

Will the talk be given in person or remotely?

Remotely

Authors: TLUSTOS, Lukas (Czech Technical University in Prague (CZ)); CHRISTODOULOU, Pinelopi (Czech Technical University in Prague (CZ))

Presenter: CHRISTODOULOU, Pinelopi (Czech Technical University in Prague (CZ))

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