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DyTER - A framework for Dynamic Track and Event Reconstruction

Wednesday, 11 July 2018 11:30 (15 minutes)

The upcoming PANDA at FAIR experiment in Darmstadt, Germany will belong to a new generation of accelerator-based experiments relying exclusively on software filters for data selection. Due to the likeness of signal and background as well as the multitude of investigated physics channels, this paradigm shift is driven by the need for having full and precise information from all detectors in order to perform a reliable data selection. In our experiment, this software trigger will need to cope with incoming event rates of up to 20 MHz, corresponding to a raw data rate of up to 200 GB/s.
At Uppsala University, our PANDA group's physics interest is focused on hyperon reactions. With respect to the reconstruction algorithms, hyperons impose a particular challenge due to their relatively long-lived nature. This causes their decay vertices to be separated from the beam-target interaction point by up to several metres. In order to filter interesting data, Uppsala is, in collaboration with other international groups, developing a framework for Dynamic Track and Event Reconstruction (DyTER). DyTER draws upon a variety of reconstruction algorithms, such as a cellular automaton and pattern matching. This presentation will give an overview of the general concept as well as showcase the current development.

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