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Using Allpix Squared for proton computed tomography

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Proton therapy is, due to its higher precision of energy deposition, an effective alternative to conventional x-ray therapy. Occurring uncertainties due to the use of x-ray computed tomography in treatment planning can be reduced through the use of proton computed tomography. To accurately predict the range of the protons in tissue, it is necessary to reconstruct the tracks of the protons through the body with the help of detectors.
A new track reconstruction software, Corryvreckan, was published in 2017 with the intention of equally good track reconstruction capability with respect to EUTelescope, while reducing external dependencies. It bears great similarity in its modular structure with the simulation software Allpix2, creating a good compatibility between the two frameworks.
The different implemented modules in Corryvreckan ensure its usability for track reconstruction and analysis in complex environments.
Applications of track reconstruction with pixel sensors are investigated at TU Dortmund with regard to proton computed tomography.
The use of Allpix2 in the context of proton computed tomogrophy is presented in this talk, for its utility of creating valid simulations, which can be further processed with Corryvreckan

Author: KRAUSE, Christopher (Technische Universitaet Dortmund (DE))

Presenter: KRAUSE, Christopher (Technische Universitaet Dortmund (DE))

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