SCHOOL OF DATA ANALYSIS

Numerical Optimization for Fast Track Finding Based on the Artificial Retina Algorithm

Maxim Borisyak, Mikhail Belous, Andrey Ustyuzhanin and Denis Derkach

National Research University Higher School of Economics; Yandex School of Data Analysis; LHCb collaboration

Track recontsturuction

Track reconstruction

Track reconstruction is a challenging task, especially, in high track multiplicity environments like at the LHC energies.

Artificial Retina algorithm

Artificial Retina is shown to be efficient for track reconstruction. The method is especially attractive due to high parallelization capacity.

Numerical Optimization for Artificial Retina

Numerical Optimization

Instead of default strategy — grid-search, one can use numerical optimization methods for local maxima search.

Experiment

Experiments with simplified model of LHCb VELO detector show results comparable to other methods.