KSETA Doktoranden Workshop 2014



Contribution ID: 37

Type: not specified

Kassiopeia particle tracking framework

Monday, July 21, 2014 4:30 PM (1 hour)

The Kassiopeia particle tracking framework is an object-oriented software package utilizing modern C++ techniques, written originally to meet the needs of the Katrin collaboration. Kassiopeia's target physics problem consists of simulating particle trajectories governed by arbitrarily complex differential equations of motion, continuous physics processes that may in part be modeled as terms perturbing that equation of motion, stochastic processes that occur in flight such as bulk scattering and decay, and potentially stochastic surface processes occuring at interfaces, including transmission and reflection effects. This entire set of computations takes place against the backdrop of a fully-featured geometry package which serves a variety of roles, including initialization of electromagnetic field simulations, gas flow simulations, and the support of state-dependent algorithm-swapping and behavioral changes. In this tutorial a short introduction to the software is given and

afterwards the students can run the simulation by themselves and track particles through the katrin mainspectrometer, investigating the properties of the MAC-E-Filter technique.

Additionally a short overview of the visualization library VTK and the tool paraview is given and how they can be used to create fancy 3d pictures of the used geometry and the particle tracks just created before.

Authors: ERHARD, Moritz (EKP); TROST, Nikolaus (KIT); GROH, Stefan (IEKP)
Presenters: ERHARD, Moritz (EKP); TROST, Nikolaus (KIT); GROH, Stefan (IEKP)
Session Classification: Tutorials