ACCELERATOR SEMINAR

Helmut Weick

GSI

Thursday, 21st February at 4 pm

KBW (Lecture Hall)
Planckstraße 1, 64291 Darmstadt

"Simulation of Fragment Separators“

Fragment separators are intended to collect and separate fragment nuclides produced in flight from a primary beam projectile. Only with such a separator the produced rare isotopes become useful for experiments. More exotic nuclei shall be produced which require a large acceptance but even more a much improved selection.
Besides the reaction kinematics in the production target followed by a magnetic separator all higher energy systems apply additional layers of matter for separation, which then require not only normal beam dynamics, but additional input from atomic and nuclear collisions. They are combined in dedicated simulation programs for rate predictions using Monte-Carlo techniques and for faster calculations of many combinations convolution of parametrized distributions.
Based on simulations the basic layout and technique of separation will be explained and the reasons for the new many stage systems (like Super-FRS, BigRIPS or ARIS) shown. Also the typical beam time planning requires a simulation and optimisation of the separator setting. Intensities must be reduced to rates suitable for tracking detectors and experiments, without they can be many orders of magnitude too high.

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