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Models Tools - PHITS

Sunday 29 October 2023 16:50 (2 hours)

Part 1: Theory - 30'
Part 2: Hands-on - 90'
PHITS (Particle and Heavy Ion Transport code System) is a general-purpose Monte Carlo code developed mainly by JAEA. PHITS has been well received for its ease of use with built-in graph plotter. In recent years, the code has been enhanced with an extended physics model and increased interfaces and evaluation quantities, and it is gradually begin recognized as a standard MC code.

The three radiation damege effects, TID, DD, and SEE, are treated by PHITS as follows. The total dose effect (TID) is evaluated by means of the [t-deposit] tally. It tallies deposit energy in a volume of interest. The displace ment damage (DD) is calculated by [t-dpa]. It counts number of displacement of atom in a volume of interest. Chain knock-on reactions as well as primary knock-on atoms are evaluated. The single event effect (SEE) is treated by SEE cross sections and radiation fluxes in the [t-track] tally.

Models and methods of the tree calculations, some benchmarks with demonstration, and a small hands-on exercise will be provided.

Presenter: IWASE, Hiroshi (KEK)