

Some methods of simulating electrostatics and neutron transport

Abstract

In the first part of the talk I focus on local methods of simulating electrostatic interaction between charged particles. Both versions - Monte Carlo (MC) and Molecular Dynamics (MD) - will be presented. It will be shown that classical part of van der Waals interaction between dielectric bodies is intrinsically included in MC algorithm. The equivalence of MD and Maxwell equations with freely adjustable speed of light will be shown.

The second part is devoted to the nuclear reactor safety analysis. Kinetic Boltzmann equation will be introduced and several different approximations usually used in simulations will be discussed.