
Use of Adaptive Multilevel Splitting for particle transport applications

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Abstract

Particle transport codes are nowadays used in a wide variety of contexts, ranging from applications (e.g. medical applications -boroneutrotherapy or gamma-therapy-, spatial applications -hardening of electronics components-, nuclear applications -reactor physics) up to fundamental physics (propagation of various particles for high energy or dark matter experiments).

A common determinant of these codes is however their need to tackle strong attenuations of the particles that are propagated, hence making them heavily rely on variance reduction technics.

The Adaptive Multilevel Splitting technic has been successfully adapted and implemented in two such codes (TRIPOLI4 and GEANT4). This talk will present some of the results recently obtained using AMS in the contexts of reactor physics and of fundamental physics (antineutrino experiments), underlining in particular the importance to handle branching processes.

Keywords: AMS, particle physics, reactor physics, branching processes

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