

Progetto UQ - Consuntivo 2012

Commissione Nazionale INFN Calcolo e Reti

The activity concerned both lines of research over which the scientific scope of the UQ project is articulated:

- 1) the quantification of the uncertainties of physics components of Monte Carlo transport codes (with focus on Geant4)
- 2) the development of methods to determine the uncertainties of simulated observables, deriving from uncertainties in the physical components used in particle transport.

Regarding 1), the following research activity were performed:

- complete refactoring, improved physics model and validation of photon elastic scattering
- complete refactoring, new calculation method, experimental validation of Geant4 radioactive decay
- first development cycle for quantitative validation of Compton scattering and photoionization

Regarding 2), the conceptual and mathematical foundation of an analytical method to quantify uncertainties was conceived and developed; verification tests in simple configurations were performed.

Results of these research activities were presented at conferences (CHEP, IEEE NSS, CAARI) and are published, or currently under review, in refereed journals.

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