Emerging requirements from Shielding applications

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Requirements from Shielding applications

- Scoring
  - Mesh scorer which independent from detector geometry
  - Cylindrical mesh scorer
  - Pre defined scorer for specific quantizes (dose, dose equivalence, 1MeV neutron equivalence and so on)
- Biasing
  - Geometrical Importance Biasing/Russian Roulette/ Weight Window
  - For EM shower (Leading particle?)
  - For Hadron shower (Reduce multiplicity?)
- Isotope production
  - As a function of particle flux (not by each reaction)
  - And calculating products decay chains, in case of necessary.

Requirements from Shielding applications

- Example and documentation
  - Is there any example for shielding?
  - Single example which can show all currently available functionalities with recommended physics list for shielding
  - Documentation for Biasing
  - Documentation for Isotope Production
- Validations
  - In order to invite new users who currently use other codes
- And many other functions which competitors (FLUKA, MCNPX, MARS and PHITS) have
  - We may be a new comer in this field, but

Geant4 did BETTER or same level to PHITS and MCNPX

- From "INTER-COMPARISON OF MEDIUM-ENERGY NEUTRON ATTENUATION IN IRON AND CONCRETE (7)" H. Hiryama Proceedings of SATIF9, OAK RIDGE (2008)
- The report about Comparison with Experimental results at AGS

  "For the steel shield, the calculated results are smaller than the measured ones in general. The results of MCNPX and PHITS agree with each other. The results of Geant4 are slightly larger than these two results and closer to the measured ones for 2.83 GeV protons and are almost same for 24 GeV protons. For the concrete shield, the results of PHITS and Geant4 are relatively in good agreement with the measured results. The results of MCNPX are smaller than these results."