Questionnaire results

Electromagnetic interactions and thresholds

23 replies (thanks!)

Electromagnetic interactions and thresholds

- Let a 10-MeV e- beam impinge on a region filled with water. Suppose you need to score energy deposition with a USRBIN with bins of volume 50x50x50 μm^3. Considering that the ranges of 1-MeV and 10-keV electrons in water are ~1 mm and ~1 μm respectively, which of the following values would you pick as electron production threshold?
  - A. 10 MeV: 0 (0.00%)
  - B. 1 MeV: 2 (8.70%)
  - C. 10 keV: 16 (69.57%)
  - D. It does not matter: 5 (21.74%)

- Delta-ray-production and transport threshold values...
  - A. ...are not written in the output files.: 1 (4.35%)
  - B. ...are written in the .err file.: 0 (0.00%)
  - C. ...are written in the .log file.: 4 (17.39%)
  - D. ...are written in the .out file.: 18(78.26%)

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- Spikes and steps in energy-deposition spectra in thin slabs...
  - A. ...are not artefacts: they are physical.: 2 (8.70%)
  - B. ...can be removed by correctly setting transport thresholds.: 5 (21.74%)
  - C. ...can be removed by correctly setting delta-ray production thresholds.: 0 (0.00%)
  - D. ...can be removed by requesting single scattering near geometry boundaries as well as in conditions where the Moliere theory does not apply, and by limiting the maximum step size.: 16 (69.57%)

- When performing particle tracking in the condensed history approximation, ...
  - A. delta-rays are explicitly generated when the energy transfer is small.: 1 (4.35%)
  - B. small ionisation losses are taken into account in terms of their cumulative effect along the particle step. : 16 (69.57%)
  - C. elastic scattering events are individually sampled.: 3 (13.04%)
  - D. the Moliere theory is applicable in case of thin layers as well as transport in low density gas. : 3 (13.04%)

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- Select the correct sentences
  - A. Delta-ray production thresholds can be set by regions.: 8 (18.18%)
  - B. For electrons, positrons and photons, transport thresholds are set by regions with the EMFCUT card.: 17 (38.64%)
  - C. The PART-THR card sets the transport threshold for all particles.: 5 (11.36%)
  - D. If the transport of electrons, positrons, and photons is off, their energy is deposited on the spot.: 14 (31.82%)