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Modelization For Electromagnetic Electron Scattering at Low Energies for Radiotherapy applications.[1] VAHAGN NAZARYAN, Hampton University, The College of William and Mary, PAUL GUEYE, Hampton University — Since release of the GEANT4 particle simulation toolkit in 2003, there has been a growing interest in its applications to medical physics. The applicability of GEANT4 to radiotherapy has been a subject of several investigations in recent years, and it was found to be of great use. Its low-energy model allows for electromagnetic interaction simulations down to 250 eV. The electron physics data are obtained from the Lawrence Livermore National Laboratory's Evaluated Electron Data Library (EEDL). At very lower energies (below 10 MeV), some of the tabulated data in EEDL have big uncertainties (more than 50%), and rely on various extrapolations to energy regions where there is no experimental data. We have investigated the variations of these cross-section data to radiotherapy applications. Our study suggests a strong need for better theoretical models of electron interactions with matter at these energies, and the necessity of new and more reliable experimental data. The progress towards such theoretical model will be presented.

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