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Secondary particle tracks generated by ion beam irradiation¹

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The Low Energy Particle Track Simulation (LEPTS) procedure is a powerful complementary tool to include the effect of low energy electrons and positrons in medical applications of radiation. In particular, for ion-beam cancer treatments provides a detailed description of the role of the secondary electrons abundantly generated around the Bragg peak as well as the possibility of using transmuted positron emitters (C11, O15) as a complement for ion-beam dosimetry. In this study we present interaction probability data derived from IAM-SCAR corrective factors for liquid environments. Using these data, single electron and positron tracks in liquid water and pyrimidine have been simulated providing information about energy deposition as well as the number and type of interactions taking place in any selected “nanovolume” of the irradiated area.

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