Abstract Submitted
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Proton Beam Therapy Summer Research[1] DANIEL ADAMS, University of Mount Union — Proton beam therapy (PBT) has become an increasingly popular form of cancer treatment because, for instance, it can be used to treat a tumor that cannot be reached with traditional surgery. In PBT, protons deliver energy to a focused region in the body to eradicate the cancerous cells. To have a successful treatment plan, the interactions between the proton beam and the patient's body need to be understood. One of the major interactions involved in PBT is Coulombic scattering, where the protons in the beam are deflected because of positively charged nuclei in the body repelling them. To characterize the energy deposition from a proton beam, I simulated a proton beam moving through a 3D atomic lattice towards a tumor. The program considers both Coulombic scattering and the depth-dependent loss of energy through the Bragg-Kleeman rule. The program also identifies the beam properties that effectively focus the energy inside the tumor.

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