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Beam Quality Requirements of Dosage Control in Laser Ion Acceleration for Radiotherapy JAO-JANG SU, XI SHAO, TUNG-CHANG LIU, CHUAN LIU, University of Maryland, C.D. CHEN, SCOTT WILKS, LLNL, UNIVERSITY OF MARYLAND TEAM, LLNL TEAM — Ion beam accelerated by laser solid target interaction has vested interested in medical applications. Particle therapy for cancer treatment is one of the most promising prospects. Typical proton beam energy spread for cancer treatment is Delta E / E $\sim$ 0.2% for synchrotron accelerator and Delta E / E $\sim$1% for cyclotron after energy selection system. Passive scattering irradiation mechanism is a common practice to induce SOBP (spread out Bragg peak) for cancer treatment. We examine depth and lateral dose distribution of hardons energized by radiation pressure via various energy selection criteria. Monte Carol codes use PIC simulation results as the input of particle beams. Dose uniformity, distal falloff and lateral penumbra are discussed in related to beam energy spread, emittance and entrance spot size will be presented.

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