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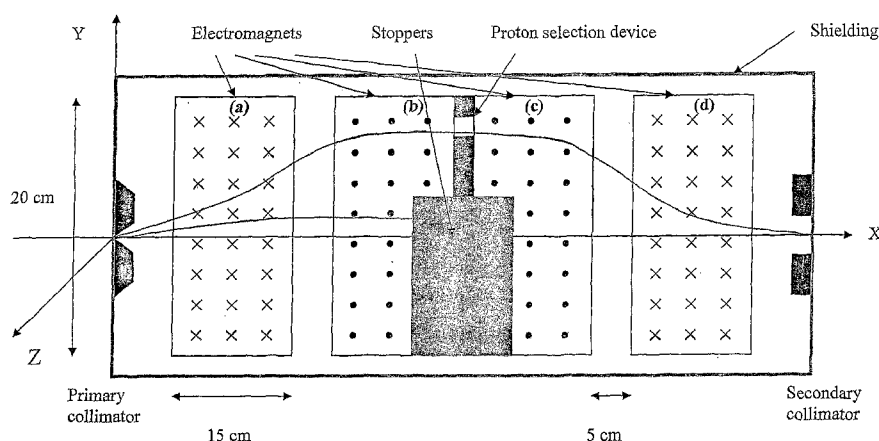
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[Continued on next page]

(54) Title: LASER-ACCELERATED PROTON THERAPY UNITS AND SUPERCONDUCTING ELECTROMAGNETIC SYSTEMS FOR SAME



(57) Abstract: Compact particle selection and collimation devices are disclosed for delivering beams of ions with desired energy spectra. These devices are useful with laser-accelerated ion therapy systems, in which the initial ions have broad energy and angular distributions. Superconducting electromagnet systems produce a desired magnetic field configuration to spread the ions with different energies and emitting angles for particle selection. The simulation of ion transport in the presence of the magnetic field shows that the selected ions are successfully refocused on the beam axis after passing through the magnetic field. Dose distributions are also provided using Monte Carlo simulations of the laser-accelerated ion beams for radiation therapy applications.

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