PROGRESS IN DEVELOPMENT ON THE COMPTON X-RAY SOURCE AT THE KAERI SC RF LINAC

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Abstract

Beamlines of both an electron beam and a laser beam for Compton Xl-lray generation are under construction in KAERI using 352 MHz SC RF linac. The electron beamline is designed to focus the electron beam size less than 100 um. A fiber delivery system of a Nd:YLF laser from the first floor to the Compton beamline in the basement is also designed to match the focused laser beam to the electron beam at the interaction point. The focusing lens system after a 50 m long fiber is designed using the CODE V and fabricated in Green Optics in Korea. Not to interfere with scattered Xl-lrays, the offl-laxis collision angle is inevitable, which is about 50 mrad for 10 MeV electrons. A fiber laser is considered to improve the characteristic of Compton Xl-lrays. We present the designs of both the electron beamline and laser delivery system for Compton Xl-lray generation. We also discuss the laser delivery system for Nonlinear Compton Xl-lray generation.

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