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A Compact Gamma Ray Source Based on ICS

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Inverse Compton Scattering is one of the best ways to generate mono-energetic gamma rays. After Tsinghu Thomson Scattering X-ray source –TTX has been developed and used as an experiment tool for advanced x-ray imaging and other applications, XGLS with the gamma ray energy of 3MeV is now under commissioning. In this paper, we will mainly descript the very compact gamma ray source with photon energy from 0.2 to 4.8MeV, which is newly designed. The linac is composed of an s-band photo-injector of energy 50MeV and 6 sections of x-band structures with gradient of more than 80MV/m to increase the electron energy to 350MeV. The electron bunch interacts with a 1.5J Ti:sapphire laser, and the flux of more than 10e9 ph/s can be generated. The length of the gamma-ray source is about 12meters long, which can be installed in a standard container.

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