原子核物理评论 2009 26 (Suppl): 109-114 ISSN: 1007-4627 CN: 62-1131/O4

Proceedings of the 3rd China-Japan-Korea Hardron and Nuclear Physics 2008 Symposium

Experiment of X-ray Generations Using Laser Compton Scattering at LINAC of SINAP

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 Laser Compton scattering(LCS) can generate X rays or γ rays with high brightness and easy controlled polarization by applying high peak power laser pulses to relativistic electron bunches. One of the most promising approaches to short pulsed X ray sources is the laser synchrotron source. It is based on LCS between picoseconds relativistic electron bunches and picoseconds laser pulses. A project of Shanghai laser electron gamma source with LCS method has been proposed on Shanghai synchrotron radiation facility. Before that, a prototype has been developed in the beamline of the linear accelerator at the Shanghai Institute of Applied Physics, Chinese Academy of Sciences. The LCS experiment was carried out by using the 107 MeV, 5 Hz, 1 ns, 0.1 nC electron bunches from the linear accelerator and the 18 ns, 10 MW peak power, Nd:YAG laser pulses. In this communication, we describe the details and report the first results of this experiment.

关键词 Compton scattering Nd:YAG laser γ ray source polarization

分类号

DOI:

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