

# **ACCELERATOR SEMINAR**

## **“Compton Sources of Electromagnetic Radiation”**

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When a relativistic electron beam interacts with a high-field laser beam, the beam electrons can radiate intense and highly collimated electromagnetic radiation through Compton scattering. Through relativistic upshifting and the relativistic Doppler effect, highly energetic polarized photons are radiated along the electron beam motion when the electrons interact with the laser light. For example, X-ray radiation can be obtained when optical lasers are scattered from electrons of tens of MeV beam energy. Because of the desirable properties of the radiation produced, many groups around the world have been designing, building, and utilizing Compton sources for a wide variety of purposes. In this review, we discuss the generation and properties of the scattered radiation, the types of Compton source devices that have been constructed to present, and the future prospects of radiation sources of this general type. Due to the possibilities to produce hard electromagnetic radiation in a device small compared to the alternative storage ring sources, it is foreseen that large numbers of such sources may be constructed in the future.

**Thursday, May 12, 2011**

**11:00 a.m.**

**CEBAF Center, Room F113**

**Coffee before seminar at 10:45 a.m.**