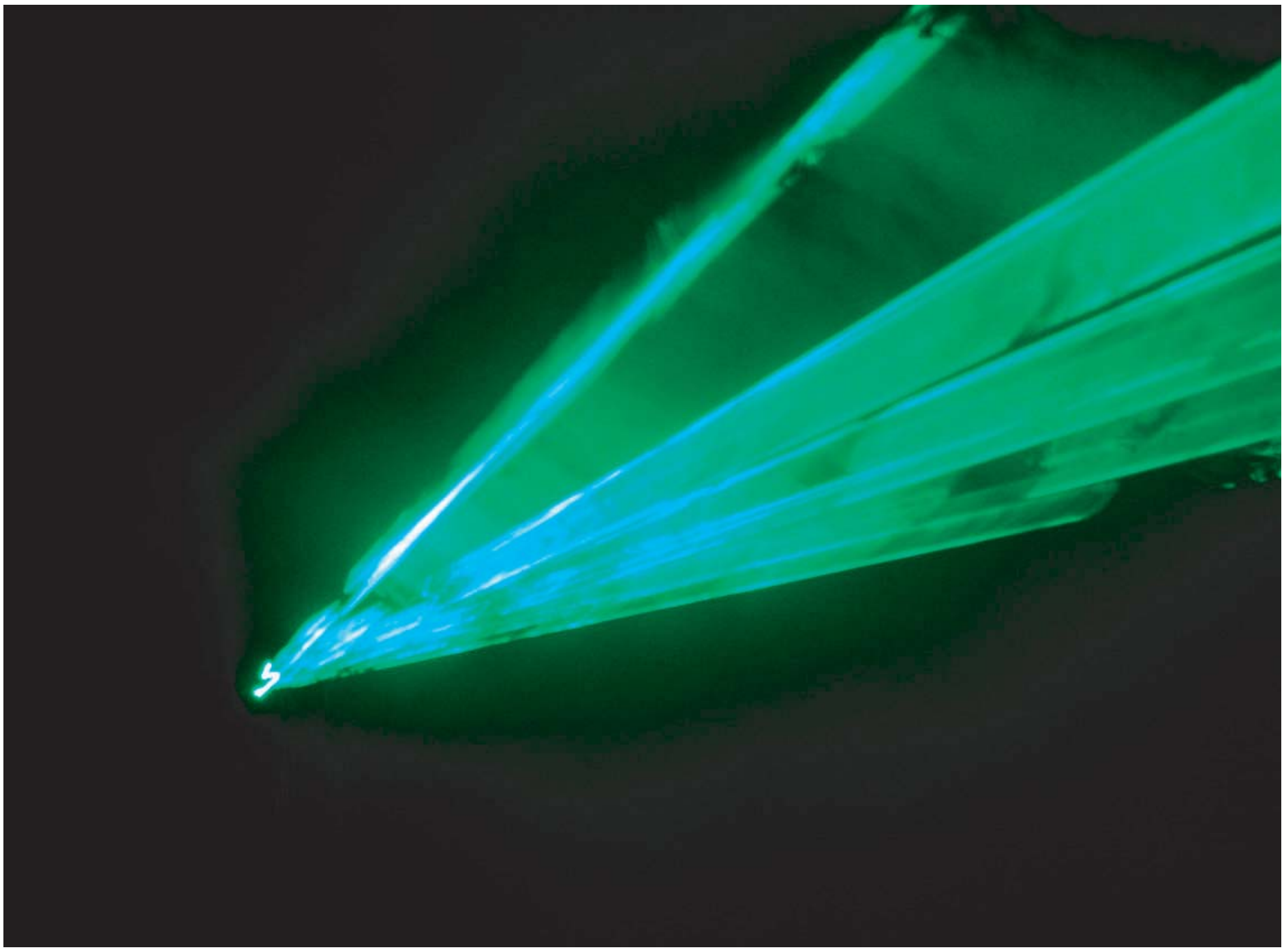
Boston University Physics Colloquium



The Quest for an X-ray Laser

The fields of laser and accelerator technology stand now at a point of remarkable opportunity: the creation of highly coherent and powerful pulses of x-ray radiation ranging in wavelength from 100 nm to 0.1 nm. The x-ray laser has been the "Holy Grail" of both the laser and the x-ray communities since the invention of the laser. Radiation in this essential wavelength range, particularly below 10 nm, is unlikely to be produced with substantial power by table-top lasers. The most viable approach involves the use of an electron bunch in an accelerator as a gain medium, the so-called free electron laser. This talk will summarize progress toward the goal of achieving high-power x-ray pulses with full transform-limited coherence at high repetition rates. Most important is the forefront science that such beams will enable. Highlights of these possibilities will be discussed.

David Moncton

MIT

November 21, 2006 (Tuesday) at 3:30 pm (Refreshments at 3:15 pm)

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