TIFR Centre for Interdisciplinary Sciences, Narsingi, Hyderabad 500075

Seminar

Reaching light speed in a centimeter

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Over the past decade, laser systems capable of delivering Petawatt power levels at high repetition rates have been developed, thanks to the advances in ultrafast laser technology. A major thrust of all these developments has been to find novel ways to accelerate charged particles to extreme energies in a very compact plasma channel –a few mm as opposed to hundreds of meters required in a conventional accelerator. Recent experimental campaigns have accelerated electrons to energies over a Giga electron Volt in a centimeter-long channel. Just like in synchrotrons, these electrons also emit copious amounts of nearly-coherent x-rays during the process of acceleration in the plasma channel, offering new sources for time-resolved x-ray imaging of condensed matter, including biological tissues. I will give an overview of the field, describing the latest developments and future directions.

Friday, Dec 20th 2013

11:00 AM (Tea/Coffee at 10:45 AM)

Seminar Hall, TCIS