

Seminar

Towards Compact Ultra-Short Relativistic Collimated Electron Source

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Laser-plasma interaction is a source of high-energy electrons, ions, and electromagnetic radiation ranging from THz to X-rays. Bright particle beam, source-size of μm order along with multi-kHz repetition rate has potential applications in a wide range of contexts. The recent developments from our lab have shown that structural modification of microdroplets with the help of laser prepulse leads to relativistic energy electron generation even at sub-relativistic laser intensity. In this talk, I will present further experiments performed to understand the underlying physics. In particular, we established that anomalous hot electron generation is by 'two plasma decay' instability. We leveraged the impact of diverse laser parameters on the energies of emitted electrons and emission propensity to unveil the pivotal factors critical to the generation of hot electrons. Moreover, the electrons emitted from laser plasma are a prospective source of time-dependent measurement. I will present the in-house developed streak camera to measure the pulse width of the ultrashort polyenergetic electrons. Additionally, the work is done to control the electron beam divergence for its efficient transport with the help of dielectric capillaries.

Thursday, Jun 6th 2024

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Seminar Hall, TIFR-H