

Students' Annual Seminar

Parametric instability excited by intense laser pulse interaction on liquid targets

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Intense laser driven plasmas are extreme states of matter with near-solid density and temperatures ranging beyond million-degree kelvin. These high-energy density systems offer many pathways of coupling between different modes such as electromagnetic, electrostatic and ion-acoustic waves. In this talk we are going to discuss recent experimental results carried out with multi-kHz femtosecond laser pulses focused on the liquid jets. Precise tailoring of the plasma density gradient with a collinear prepulse, allows control over the growth of different parametric instabilities. The excitation and growth of these instabilities are monitored using the spectrum of the back-reflected light. The damping of the parametric waves lead to generation of energetic electrons and consequently high-energy bremsstrahlung photons. Furthermore, thanks to the inherent stability of the multi-kHz laser-jet interactions, some of the applications involving electron, soft-X Ray and hard-X Ray radiography would be discussed.

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2:00 PM

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