Seminar

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Institute for Plasma Research

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Title:	Terahertz Computed Tomography and its Prospectus
Speaker:	Dr. Mukesh Jewariya Council of Scientific and Industrial Research, New Delhi
Date:	17th October 2024 (Thursday)
Time:	03:30 PM
Venue:	Seminar Hall, IPR

Abstract

A novel technique has been demonstrated for the generation of intense terahertz electromagnetic wave that enables high-field near-single-cycle terahertz (THz) pulse via non-collinear $\chi^{(2)}$ process in $LiNbO_3$ with both phase-front and spectral angular dispersion. Using this technique we are able to generate a single cycle (broadband) terahertz pulse upto an electric field of 750kV/cm

We have also demonstrated the potential of this intense THz pulse for 3D THz imaging, which is 13- times higher than that of previous system based on collinear optical rectification in ZnTe crystal. The main advantage of the proposed method relies on real-time THz line projection providing 10 ms acquisition time of 2D-ST THz image. Therefore, 3D THz CT has been performed in only 6 minutes, representing a significant improvement compared with common systems. Finally, demonstration of 3D images clearly indicated a high potential for sensing, non-destructive inspection and material characterization in real world applications.