Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Spin–Orbit Interaction Mediated Measurement of Optical Anisotropy

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In this talk, I will explore the use of spin–orbit interaction (SOI) of light as a sensitive tool for measuring weak optical anisotropy in crystals. In reflection geometry, dark-field spin Hall effect of light (DF-SHEL) and optical vortex trajectory (OVT) analysis are employed to investigate weak surface anisotropy and chirality near normal incidence. In transmission geometry, extreme cross-polarisation extinction (EXE) is combined with the intrinsic SOI of a weakly diverging Gaussian beam to probe weak bulk anisotropy. These approaches transform subtle polarisation changes into measurable spatial and intensity variations, enabling sensitive characterisation of weak surface optical activity and residual elliptical birefringence in uniaxial crystals.

Tuesday, Nov 3rd 2026

14:30 Hrs