Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

Colloquium

Two-dimensional Coherent Spectroscopy of Excitons in Semiconductor Quantum Wells

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Two-dimensional coherent spectroscopy (2DCS) is a powerful technique to study coherent light-matter interactions over subpicosecond timescale [1]. In this technique, a typical one-dimensional signal is mapped on to two frequency axes, which is especially useful for systems with inhomogeneous broadening, multiple resonances, and many-body interactions. In this talk, I will discuss work on quantifying exciton-exciton interactions in semiconductor quantum wells (QWs) measured using 2DCS [2-4].

References:

[1] S. T. Cundiff and S. Mukamel, "Optical multidimensional coherent spectroscopy", Phys. Today 66, 44 (2013).
[2] R. Singh et al., "Quantifying spectral diffusion by the direct measurement of the correlation function for excitons in semiconductor quantum wells", J. Opt. Soc. Am. B 33, C137 (2016).
[3] R. Singh et al., "Localization dynamics of excitons in disordered semiconductor quantum wells", Phys. Rev. B 95, 235307 (2017).
[4] R. Singh et al., "Polarization-dependent exciton linewidth in semiconductor quantum wells: A consequence of bosonic nature of excitons", Phys. Rev. B 94, 081304(R) (2017).

Tuesday, Jan 15th 2019

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H