FOUR-POINT CORRELATIONS OF MOLECULAR FLUCTUATIONS BY TWO-DIMENSIONAL OPTICAL SPECTROSCOPY

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Two-dimensional phase modulation electronic coherence spectroscopy (PM-ECS) is a phase-selective fluorescence detection technique that is uniquely suited to study the interplay between coherent and incoherent coupling between optical transitions of molecular complexes [a]. The fluorescence detection aspect of this method is advantageous to study the electronic energy transfer between chromophores of the tetrameric fluorescent protein DsRed in the visible regime. DsRed is a model energy transfer complex to study strong coupling effects between chromophores in an otherwise dilute sample and also to study the effects of both vibrational and thermal decoherence. Novel aspects of this technique and current progress will be presented.

[a] P. F. Tekavec, G. A. Lott, and A. H. Marcus, J. Chem. Phys. 127, 214307 (2007).