

# Exciton Dynamics in Coupled Molecular Aggregates

Erik A. Bloemsma, Maurits H. Silvis, Victor A. Malyshev and Jasper Knoester  
*Center for Theoretical Physics, Zernike Institute for Advanced Materials, University of Groningen, The Netherlands*

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**Abstract** The remarkable spectral signatures and outstanding energy transport properties of molecular aggregates arise from the collective nature of the excitations. Crucial in understanding and ultimately control of these fascinating features, is the interplay between intermolecular resonance interactions, disorder and coupling to a dynamical environment. We study this interplay in detail for two closely spaced molecular aggregates, going beyond the standard perturbative treatment of the couplings between aggregates and the host and discuss consequences for optical spectra and exciton transport within and between aggregates. Our findings may be utilized in the ongoing challenge of controlling natural and realizing novel light harvesting complexes.