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Time-domain ab initio studies of excitation dynamics in semiconductor quantum dots

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Solar energy applications require understanding of dynamical response of novel materials on nanometer scale. Our state-of-the-art non-adiabatic molecular dynamics techniques, implemented within time-dependent density functional theory, allow us to model such response at the atomistic level and in real time. The talk will focus on single and multiple exciton generation, relaxation, annihilation and dephasing in semiconductor quantum dots.

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