Abstract Submitted
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Quantum Stark confined strongly correlated indirect excitons in quantum wells[1] P. LUDWIG[2], University Kiel, University Rostock, A. FILINOV, M. BONITZ, University Kiel, H. STOLZ, University Rostock, YU. E. LOZOVIK, Inst. Spectroscopy, Troitsk, Russia — We consider small ensembles of optically excited indirect excitons (IE) in a quantum well. Using path integral Monte Carlo simulations we compute from first principles the spatial separation of electrons (e) and holes (h) and the lateral quantum Stark confinement in the quantum well due to a strong electric field from a tip electrode [1]. Electrons and holes are shown to form permanent dipoles with a strong repulsion giving rise to interesting correlation and quantum effects [2,3]. By changing the field strength, tip to sample distance and excitation intensity (IE number) we predict the parameter range where exciton crystallization is expected to be observable in experiments on ZnSe based quantum wells. [1] P. Ludwig et al., phys. Stat. Sol. (b) 243, 2363 (2006) [2] A. Filinov et al., phys. Stat. Sol. (c) 3, 2457 (2006) [3] A. Filinov et al., J. Phys. Conf. Ser. 35, 197 (2006)

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