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Electric Field Effect on Wannier- Frenkel Hybrid Exciton in a Quantum Dot Coated by an Organic Shell QUE HUONG NGUYEN, Physics Department, Marshall University, One John Marshall Dr., WV 25701, JOSEPH L. BIRMAN, Physics Department, City College, CUNY, Convent Ave. & 138 Street, NY 10031 — The effect of external electric field on the Wannier Mott-Frenkel hybrid excitons in the configuration of a spherical semiconductor quantum dot coated by an organic shell has been studied. The electric field reduces the exciton binding energy and shifted the resonance region where the Wannier and Frenkel exciton are strongly mixed. The quadratic Stark dependence of the hybrid exciton energy on the electric field was found for the confined Stark effect for the hybrid exciton. Upon the application of field the coupling term between the two kinds of excitons increases. An important result is the possibility of tuning the Wannier-Frenkel exciton resonance by applied electric field

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