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Dephasing in lateral double quantum dot systems due to evanescent-wave Johnson noise[1] ROBERT JOYNT, MAXIM VAVILOV, LUKE LANGSJOEN, AMRIT POUDEL, University of Wisconsin-Madison — Lateral double quantum dots suffer decoherence due to coupling to the environment. Previous theoretical calculations of dephasing time based on the phonon bath model (Vorojtsov et al. PRB 71, 2005) and gate-voltage fluctuations (Valente et al. PRB 82, 2010) are insufficient to explain the short dephasing time observed in experiment with a charge-based double quantum dot system (Petta et al. PRL 93, 2004). Here we analyze the effect of fluctuating electromagnetic fields in the vicinity of conducting gates on the dephasing rate of charge-based double quantum dot systems.

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