

SYSTEMS OF REFLECTED DIFFUSIONS WITH ANNIHILATIONS THROUGH MEMBRANES

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We study interacting particle systems which can model the transport of positive and negative charges in a solar cell or the population dynamics of two segregated species under competition. The hydrodynamic limit and the fluctuation limit for the particle densities can be described, respectively, by a coupled Partial Differential Equation (PDE) and a Gaussian process solving a Stochastic Partial Differential Equation (SPDE). New tools of discrete approximations to reflected diffusions will be discussed. (Joint work with Zhen-Qing Chen)