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Section:

11. Mathematical Physics

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Travelling Waves in a Reaction-Diffusion System with KPP-kinetics
A new asymptotic method is presented for the analysis of the travelling waves in the reaction-diffusion system with the diffusion with a finite velocity and Kolmogorov-Petrovskii-Piskunov kinetics. The analysis makes use of the functional integral approach, scaling procedure and the singular perturbation techniques involving the large deviations theory for the Poisson random walk. The exact formula for the position and speed the reaction front is derived. It is found that the reaction front dynamics is formally associated with the relativistic Hamiltonian mechanics.