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Abstract for an Invited Paper  
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**Rare events and phase transitions in reaction diffusion systems<sup>1</sup>**

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I shall discuss a way to evaluate tails of the probability distribution functions in stochastic reaction-diffusion models. The method is based on the semi-classical treatment of a proper “quantum” field theory, which may be associated with reaction-diffusion systems. The same set of ideas may be applied to a classification of non-equilibrium phase transitions, taking place in these models.

V. Elgart and A. Kamenev, Classification of phase transitions in reaction–diffusion systems, Phys. Rev. E 74, 041101 (2006).

V. Elgart and A. Kamenev, Rare Events Statistics in Reaction–Diffusion Systems, Phys. Rev. E. 70, 041106 (2004).

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