



Contribution ID: 40

Type: Poster

Velocity-fluctuation-induced anomalous kinetics in multi-species reaction-diffusion system

Tuesday, 26 September 2023 16:43 (1 minute)

We investigate the anomalous kinetics of two-species reaction-diffusion system $A + A \rightarrow (\emptyset, A)$, $A + B \rightarrow A$ near its upper critical dimension $d_c = 2$. In particular, we analyze an advection of reactants by random velocity field generated by the stochastically forced Navier-Stokes equation. The model is analysed by means of field-theoretic renormalization group (RG) and two-parameter (ϵ, Δ) expansion. Here ϵ denotes deviation from Kolmogorov scaling and Δ is deviation from space dimension $d = 2$. The RG analysis is performed to leading order in perturbation scheme and all stable macroscopic regimes are identified.

Primary authors: Mr KECER, Matej (Institute of Physics, Faculty of Science, P. J. Šafárik University, Park Angelinum 9, 040 01 Košice, Slovakia); Prof. HNATIČ, Michal (Institute of Physics, Faculty of Science, P. J. Šafárik University, Park Angelinum 9, 040 01 Košice, Slovakia; Institute of Experimental Physics, Slovak Academy of Sciences, Watsonova 47, 040 01 Košice, Slovakia); Dr LUČIVJANSKÝ, Tomáš (Institute of Physics, Faculty of Science, P. J. Šafárik University, Park Angelinum 9, 040 01 Košice, Slovakia)

Presenter: Mr KECER, Matej (Institute of Physics, Faculty of Science, P. J. Šafárik University, Park Angelinum 9, 040 01 Košice, Slovakia)

Session Classification: Poster Session