

Effects of Turbulent Mixing on the Critical Behavior

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(Submitted on 15 Mar 2010)

Effects of strongly anisotropic turbulent mixing on the critical behavior are studied by means of the renormalization group. Two models are considered: the equilibrium model A, which describes purely relaxational dynamics of a nonconserved scalar order parameter, and the Gribov model, which describes the nonequilibrium phase transition between the absorbing and fluctuating states in a reaction-diffusion system. The velocity is modelled by the d-dimensional generalization of the random shear flow introduced by Avellaneda and Majda within the context of passive scalar advection. Existence of new nonequilibrium types of critical regimes (universality classes) is established.

Comments: Talk given in the International Bogolyubov Conference "Problems of Theoretical and Mathematical Physics" (Moscow-Dubna, 21-27 August 2009)

Subjects: **Statistical Mechanics (cond-mat.stat-mech)**; Chaotic Dynamics (nlin.CD)

MSC classes: 76F30

Cite as: [arXiv:1003.2855v1](https://arxiv.org/abs/1003.2855v1) [cond-mat.stat-mech]

Submission history

From: Nikolai Antonov [[view email](#)]

[v1] Mon, 15 Mar 2010 07:21:31 GMT (32kb)

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