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Stochastic dissipative PDE's and Gibbs measures. (English) Zbl 0974.60046
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This paper concerns a class of dissipative nonlinear PDE's forced by a random perturbation with the state space varying in a bounded domain. The analysis covers the following items: 1. Preliminary: 1.1. Invariant measures for a class of Markov chains, 1.2. Stationary process corresponding to an invariant measure, 1.3 Gibbs system; 2. Invariant measures for nonlinear dissipative semigroups: 2.1. Statement of the main results, 2.2. Scheme of the proof of Theorem 2.2; 3. Lyapunov-Schmidt type reduction: 3.1. Statement of the result, 3.2. Markov chain in the space $\mathcal{B}_N = H_N \times H_N^1$; 4. A version of the RPF-Theorem: 4.1. Statement of the result, 4.2. Proof of Theorem 4.1, 4.3. Sufficient conditions for application of Theorem 4.1; 5. Proof of Theorem 2.2: 5.1. Reduction to Theorem 4.1, 5.2. Checking condition (H_1) , 5.3. Checking condition (H_2) ; 6. Ergodic properties of the invariant measure: 6.1. Support of the invariant measure, 6.2. Convergence of the invariant measure and mixing; 7. Application to stochastic dissipative PDE's: 7.1. Navier-Stokes equations in a bounded domain, 7.2. Navier-Stokes equations on a torus, 7.3. A nonlinear Schrödinger equation on a torus; 8. Appendix: Proof of Theorem 3.1.

Reviewer: [Constantin Vârsan \(București\)](#)

MSC:

[60H15](#) Stochastic partial differential equations (aspects of stochastic analysis)

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Keywords:

stochastic partial differential equations; Gibbs measures; random perturbation

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