

**Li, Kaitai; Zhao, Chunshan**

**Uniform attractors of non-autonomous dissipative semilinear wave equations.** (English)

Zbl 1046.37048

Prog. Nat. Sci. 13, No. 2, 100-108 (2003).

The authors study the following second-order semilinear damped hyperbolic equation in a bounded domain  $\Omega \subset \mathbb{R}^n$

$$u_{tt} + \alpha u_t - \Delta u + g(u) = f(x, t), \quad (1)$$

where the nonlinearity  $g$  satisfies the standard dissipativity and growth assumptions and the external forces  $f$  depend almost periodically on  $t$ . The main result of the paper is the existence of a uniform attractor of equation (1) in the natural energy phase space. Moreover, if the external forces are quasiperiodic on  $t$  then this attractor is finite-dimensional and the estimate on its dimension is also given.

It is however necessary to note that the result of the paper is clearly not new and is factually contained, e.g., in the paper of *M. I. Vishik* and *V. V. Chepyzhov* [J. Math. Pures Appl., IX. Sér. 73, 279–333 (1994; Zbl 0838.58021)]. See also the monograph of the same authors [Attractors for equations of mathematical physics, Colloquium Publications: AMS. 49 (2002; Zbl 0986.35001)] for a detailed exposition including also the non almost-periodic case.

Reviewer: *Sergey Zelik (Moskva)*

**MSC:**

- 37L30 Infinite-dimensional dissipative dynamical systems–attractors and their dimensions, Lyapunov exponents
- 35B41 Attractors
- 35L70 Second-order nonlinear hyperbolic equations

**Keywords:**

nonautonomous semilinear wave equation; uniform attractor; Hausdorff dimension; fractal dimension