

[Lazer, Alan C.](#)

Some remarks on parabolic solutions of parabolic differential equations. (English)

[Zbl 0551.35044](#)

Dynamical systems II, Proc. int. Symp., Gainesville/Fla. 1981, 227-246 (1982).

[For the entire collection see [Zbl 0532.00014](#).]

The author studies the existence and stability of time-periodic solutions of semilinear and linear second order parabolic differential equations under Dirichlet boundary conditions in a bounded domain. Several results, analogous to known ones for elliptic problems are obtained; in particular, the result of *J.-L. Kazdan* and *F. W. Warner* [Commun. Pure Appl. Math. 28, 567-597 (1975; [Zbl 0325.35038](#))] is generalized to this setting. The main tools are the notion (developed here) of principal eigenvalue and eigenfunction for linear periodic Dirichlet problems, and the Kolesov method of upper and lower solutions for proving the existence of solutions.

Reviewer: P.Fife

MSC:

[35K60](#) Nonlinear initial, boundary and initial-boundary value problems for linear parabolic equations

Cited in **2** Documents

[35B10](#) Periodic solutions to PDEs

[35B35](#) Stability in context of PDEs

Keywords:

existence; stability; time-periodic solutions; Dirichlet boundary conditions; principal eigenvalue; upper and lower solutions