

Butler, Geoffrey; Waltman, Paul
Persistence in dynamical systems. (English) Zbl 0603.58033
J. Differ. Equations 63, 255-263 (1986).

A continuous flow on a locally compact metric space with invariant boundary is considered. The criterion of the uniform persistence of the flow is obtained.

Reviewer: V.Sobolev

MSC:

37C10 Dynamics induced by flows and semiflows
92D25 Population dynamics (general)

Cited in **6** Reviews
Cited in **148** Documents

Keywords:

persistence; flow

Full Text: [DOI](#)

References:

- [1] Bhatia, N.P; Szegő, G.P, Dynamical systems: stability theory and applications, () · [Zbl 0993.37001](#)
- [2] Butler, G; Freedman, H; Waltman, P, Uniformly persistent systems, (), 425-430 · [Zbl 0603.34043](#)
- [3] Freedman, H.I, Deterministic mathematical models in population ecology, (1980), Marcel Dekker New York · [Zbl 0448.92023](#)
- [4] Freedman, H.I; Waltman, P, Persistence in models of three interacting predator-prey populations, *Math. biosci.*, 68, 213-231, (1984) · [Zbl 0534.92026](#)
- [5] Freedman, H.I; Waltman, P, Persistence in a model of three competitive populations, *Math. biosci.*, 73, 89-101, (1985) · [Zbl 0584.92018](#)
- [6] Gard, T.C; Hallam, T.G, Persistence in food webs. I. Lotka-Volterra food chains, *Bull. math. biol.*, 41, 877-891, (1979) · [Zbl 0422.92017](#)
- [7] Hale, J, Theory of functional differential equations, (1977), Springer-Verlag New York
- [8] Hirsch, M.W; Pugh, C, Stable manifolds and hyperbolic sets, (), 133-165
- [9] Hutson, V; Vickers, G.T, A criterion for permanent coexistence of species, with an application to a two-prey one-predator system, *Math. biosci.*, 63, 253-269, (1983) · [Zbl 0524.92023](#)
- [10] May, R.M; Leonard, W.J, Nonlinear aspects of competition between three species, *SIAM J. appl. math.*, 29, 243-253, (1975) · [Zbl 0314.92008](#)
- [11] Nitecki, Z, Differentiable dynamics, (1971), M.I.T. Press Cambridge
- [12] Schuster, P; Sigmund, K; Wolff, R, On ω -limits for competition between three species, *SIAM J. appl. math.*, 37, 49-54, (1979) · [Zbl 0418.92016](#)
- [13] Sell, G; Sibuya, Y, Behaviour of solutions near a critical point, (), 501-506
- [14] Smale, S, Differentiable dynamical systems, *Bull. amer. math. soc.*, 73, 747-817, (1967) · [Zbl 0202.55202](#)

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