

Kloeden, P. E.; Krasnosel'skij, A. M.

Twice degenerate equations in spaces of vector-valued functions. (English) Zbl 0952.47046
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The purpose of this paper is to calculate an index at infinity for the following classes of asymptotically linear and asymptotically homogeneous vector fields:

$$Tx = x - A(x + f(t, x) + b(t)),$$

respectively

$$Tx = x - A(x + f(t, x) + q(t, x)).$$

Applications to a periodic problems for a system of two nonlinear first-order ODE and to a two-point BVP for a system of two nonlinear second-order ODE are also given.

Reviewer: A.Petrusel (Cluj-Napoca)

MSC:

47H11 Degree theory for nonlinear operators

47H30 Particular nonlinear operators (superposition, Hammerstein, Nemytskiĭ, Uryson, etc.)

Keywords:

index at infinity; asymptotically linear and asymptotically homogeneous vector fields; periodic problems; system of two nonlinear first-order ODE; nonlinear second-order ODE