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Nota di contenuto	A general formula for the expansion sets -- Exact asymptotic spreading speed in different frameworks -- Properties of the generalized principal eigenvalues -- Proof of the spreading property -- The homogeneous, periodic and compactly supported cases -- The

almost periodic case -- The uniquely ergodic case -- The radially periodic case -- The space-independent case -- The directionally homogeneous case -- Proof of the spreading property with the alternative definition of the expansion sets and applications -- Further examples and other open problems.

Sommario/riassunto

"In this monograph, we review the theory and establish new and general results regarding spreading properties for heterogeneous reaction-diffusion equations. These are concerned with the dynamics of the solution starting from initial data with compact support. The nonlinearity f is of Fisher-KPP type, and admits 0 as an unstable steady state and 1 as a globally attractive one (or, more generally, admits entire solutions , where is unstable and is globally attractive). Here, the coefficients are only assumed to be uniformly elliptic, continuous and bounded in . To describe the spreading dynamics, we construct two non-empty star-shaped compact sets such that for all compact set (resp. all closed set , one has lim . The characterizations of these sets involve two new notions of generalized principal eigenvalues for linear parabolic operators in unbounded domains. In particular, it allows us to show that and to establish an exact asymptotic speed of propagation in various frameworks. These include: almost periodic, asymptotically almost periodic, uniquely ergodic, slowly varying, radially periodic and random stationary ergodic equations. In dimension N, if the coefficients converge in radial segments, again we show that and this set is characterized using some geometric optics minimization problem. Lastly, we construct an explicit example of non-convex expansion sets" --