Traveling wave solutions for monotone systems of impulsive reaction-diffusion equations

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Many systems in Life Sciences have been modeled by Reaction Diffusion Equations (RDE). However, under some circumstances, these biological systems may experience instantaneous and periodic perturbations (e.g. harvest, birth, release) such that an appropriate formalism is necessary, using, for instance, Impulsive Reaction Diffusion Equations (IRDE). While the study of traveling waves for monotone RDE has been done in several works, like [2], very little has been done in the case of (monotone) IRDE. Based on recursion equations theory [1], we aim to present in this talk a generic framework that handles two main issues of IRDE. First, it allows the characterization of spreading speeds in monotone systems of IRDE. Second, it deals with the existence of traveling waves for (nonlinear) monotone systems of IRDE. We apply our methodology to a system of IRDE that models tree-grass interactions in fire-prone savanna [4], extending the result obtained in [3].

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