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Asymptotic behavior of solutions to reaction-diffusion equations with time-delay

In this talk, we consider a mono-stable reaction-diffusion equation with time-delay, which represents the population model of single species like Australian blowflies. When the system of equations is non-monotone, it possesses some monotone or non-monotone traveling waves dependent on the time-delay to be small or big. We clarify that, for a certain given initial data, the corresponding solution will converge to a certain monotone or non-monotone traveling wave, where the wave speed can be specified due to how fast the initial data vanishes at far field $x = -\infty$, the location of the wave can be also determined by the given initial data, and the shape of the wave is determined by the size of the time-delay.