

数学与系统科学研究院学术报告

报告题目: Delay and Partial Differential Equations in Species Dynamics

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摘要:

Time delays (discrete or continuous) have been incorporated by many researchers into biological models (food chains and epidemiological models, for example), to represent various phenomena (for instance, resource maturation periods, feeding times, reaction times, etc.). In general, delay differential equations exhibit much more complicated dynamics than ordinary differential equations since a time delay could cause a stable population to fluctuate. In general, partial differential equations are used to model the diffusion process, which is one type of transport phenomenon. The model can describe spontaneous spreading of matter, a process by which a group of particles (for example, animals or bacteria) spreads as a whole according to the irregular motion of each particle. When this microscopic irregular movement results in some macroscopic regular motion of the whole group, the phenomenon is a typical diffusion process. This talk will provide a brief overview on the delayed and spatiotemporal dynamics of predator-prey models, based on typical examples like Holling-II and Leslie-Gower types of systems.