Departmental Colloquium

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Spreading Speeds and Linear Determinacy of Time Dependent Diffusive Cooperative/Competitive systems

ABSTRACT:

In this talk, I will discuss the spreading speeds and linear determinacy of diffusive cooperative/competitive systems with time recurrent dependence. First, the notion of spreading speed intervals for diffusive cooperative systems is introduced via the natural features of spreading speeds and some basic spreading properties are established. Next, some principal Lyapunov exponent and principal Floquet bundle theory for linear cooperative systems of ordinary differential equations is developed. In terms of the principal Lyapunov exponent and principal Floquet bundle theory, some upper and lower bounds for the spreading speed intervals for diffusive cooperative systems are then established. Under certain conditions, it is proved that a diffusive cooperative system has a single spreading speed and is linearly determinant.