Department of Mathematics Colloquium

What is a Delay Differential Equation?

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Abstract:

What do the following problems have in common?

- Adjusting the water temperature when showering

- Driving in a lane in the traffic

- Balancing a stick on the fingertip

- Determining the position of the prey from the its sound

These all involve time delays as a significant element of their dynamics and are described by delay differential equations. There is in fact no shortage of such examples since time delays arise naturally as an inevitable consequence of the finite speed of information propagation or processing in physical, biological, and social systems. In contrast to ordinary differential equations, delay equations have an infinite-dimensional state space and their analysis is more challenging. Geared towards non-experts, this introductory talk aims to give a glimpse into the models, applications, and mathematical aspects of delay differential equations.

Date: Wednesday, October 1, 2025

Time: 15:40-16:40

Place: Mathematics Seminar Room, SA-141

Light refreshments will be served prior to the talk.