

Applications of integral and nonlocal evolutionary models

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In this seminar, we will explore the applications of various integral and non-local evolution models for biology, epidemiology, engineering, and beyond, characterized by the dependence on the past history of the phenomenon. We will consider evolutionary phenomena modelled by Volterra integral equations (VIEs), VIEs with delay, VIEs with periodic solutions, and Volterra integro-differential equations. Real-life problems, whose dynamics in time and space are described by Volterra-Fredholm integral equations, will be illustrated, for example in the context of population dynamics. Additionally, we will examine phenomena with memory, described by time fractional differential equations. The seminar will be enriched with numerical simulations related to specific applications in the fields of vegetation and chemical engineering.