

**Recent discrete-continuous contributions to eco-finance networks and
cooperative game theory**

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This talk presents recent research contributions in cooperative game theory, eco-finance and gene-environment networks, their dynamics, modeling and optimization. Motivations, applications and interpretations are from the sectors of finance, environment, medicine, education, development and international collaboration. We include uncertainty in polyhedral and ellipsoidal forms, and as stochastic differential equations as well. For turning from time-continuous to discrete models, we use advanced Heun and Milstein schemes, respectively. We present hybrid models and use stochastic hybrid control. Further, we deal with cooperative ellipsoidal games, a class of transferable utility games where the worth of each coalition is an ellipsoid instead of a real number. Here, we study sharing problems under ellipsoidal uncertainty. We introduce the ellipsoidal core and study properties of this solution concept. Our talk pays a special attention to the optimization and control aspects, with an emphasis on mixed discrete-continuous and topological features; it ends with a conclusion, an outlook and invitation to future investigations.