

The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics
Joint Seminar Announcement



Continuous-time Markovian Coherent Risk Measure and Its Optimal Control

By

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Date : **15 July 2026 (Wednesday)**
Time : **2:00 – 3:15 PM**
Venue : **Case Room 1001, 1/F, LSK Business Building**

Abstract:

We study the formation of the risk function which, in continuous time, assesses the risk borne by a decision maker (DM) who has coherent-risk attitudes and faces a finite-state Markov process. In our limiting process involving ever finer partitions of time, risks are characterized by semi-derivatives that were introduced by Dentcheva and Ruszczyński \cite{DR2018} to measure coherent risks' changes in response to random state oscillations. While the resulting function's satisfaction of a certain ordinary differential equation (ODE) can help with validation, its generalization to a Hamilton-Jacobi-Bellman (HJB) equation when involving optimal control should constitute our main contribution. Our infinitesimal-interval approach has the added benefits of relying on only model primitives and providing a natural discrete-time approximation scheme. The semi-derivative of the spectral risk that we derive to prove the first point also seems to be new. Some results can be extended to a discounted infinite-horizon setting as well. When transition probabilities are substituted by cumulant generating functions (CGFs), our approach can cover simple continuous-state cases.

Bio:

Dr. Jian Yang obtained his Ph.D. in Management Science from the University of Texas at Austin. After working for the Department of Mechanical and Industrial Engineering at New Jersey Institute of Technology, he is now a professor at the Department of Management Science and Information Systems, Rutgers Business School, Rutgers University. Dr. Yang's research interests are in combinatorial optimization, logistics, production and inventory control, dynamic pricing, and game theory. At present he is particularly interested in the role played by risk and ambiguity in dynamic inventory-price control and game-theoretical settings.