## Majorization, Stochastic Orders, and Bounds for Phase-Type Distributions



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Dr. Qi-Ming He is a professor in the Department of Management Sciences at the University of Waterloo. He received a PhD from the Institute of Applied Mathematics, Chinese Academy of Sciences in 1989 and a PhD from the Department of Management Science at the University of Waterloo in 1996. His main research areas are algorithmic methods in applied probability, queueing theory, and production management. In investigating various stochastic models, his favorite methods are matrix analytic methods. Recently, he is working on queueing systems with multiple types of customers and abandonment, Markov modulated fluid flow processes, representations of phase-type distributions and their applications, and the application of neural networks (big models) in stochastic models.

**Abstract:** In this talk, we present three applications of majorization and stochastic orders in the study of phase-type distributions. First, we introduce phase-type (PH) distributions, majorization and stochastic orders. and some theoretical results. Then we present applications to PH-distributions and Markov modulated Poisson processes.

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