

September 30th, 2019
KAP 414
2:00 P.M. – 3:00 P.M.

Professor Ruoting Gong
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“Wiener-Hopf Factorization for
Time-Inhomogeneous Markov Chains”

Abstract: Wiener-Hopf factorization encompasses several important results in probability and stochastic processes, as well as in operator theory. The importance of the Wiener-Hopf factorization stems not only from its theoretical appeal, manifested, in part, through probabilistic interpretation of analytical results, but also from its practical applications in a wide range of fields, such as fluctuation theory, insurance, and finance. The various existing forms of Wiener-Hopf factorization for Markov chains, strong Markov processes, Levy processes, and Markov additive process, have been obtained only in the time-homogeneous case. However, there are abundant real-life dynamical systems that are modeled in terms of time-inhomogeneous processes, and yet the corresponding Wiener-Hopf factorization theory is not available for this important class of models. In this talk, I will first provide a survey on the development of Wiener-Hopf factorization for time-homogeneous Markov chains. Then, I will discuss our recent work on WHf for time-inhomogeneous Markov chains. To the best of our knowledge, this study is the first attempt to investigate the WHf for time-inhomogeneous Markov processes.

This talk is based on a joint work with Tomasz R. Bielecki, Ziteng Cheng, and Igor Cialenco.