

# GRADUATE SEMINAR

Di Lu

## Numerical Methods for M-matrix Riccati Equations

*MSc Student supervised by C-H Guo*

Monday December 1  
10:30 am  
CW 307.20 (math lounge)

**Abstract:** M-matrix Riccati equations appear in the study of Markov chains and in transport theory. There are a lot of methods to solve this type of equations. I will start with basic theorems for general algebraic Riccati equations, and then introduce Newton's iteration, fixed-point iterations, Schur method and doubling algorithm for M-matrix Riccati equations. I will explain how the minimal nonnegative solution can be computed by these methods. Some numerical analyses are provided. A specific M-matrix Riccati equation is addressed at the end.