



Colloquium

March 27, 4:05 p.m. (9th Period)
(in the Atrium)

Speaker:Rhea Shroff

Title:Accelerating the Computation of Tensor Z Eigenvalues

Abstract

Efficient solvers for tensor eigenvalue problems are important tools for the analysis of higher-order data sets. For the talk, we will introduce, analyze and demonstrate an extrapolation method to accelerate the widely used shifted symmetric higher order power method for tensor Z-eigenvalue problems. We will analyze the asymptotic convergence of the method, determining the range of extrapolation parameters that induce acceleration, as well as the parameter that gives the optimal convergence rate. We will also introduce an automated method to dynamically approximate the optimal parameter and demonstrate its efficiency when the base iteration is run with either static or adaptively set shifts. Finally, we will discuss numerical results on both even and odd order tensors which demonstrate the theory and show we achieve our theoretically predicted acceleration.