

## **Efficient randomized algorithms for subspace system identification**

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Eigensystem realization algorithm (ERA) is a well-known algorithm for system identification and reduced order modeling of linear dynamical systems subjected to impulse inputs. However, ERA requires the computation of the singular value decomposition of a large block Hankel matrix and can be prohibitively expensive for systems with many inputs, outputs, and time samples. In this talk, I will present two different randomized algorithms that significantly reduce the computational and memory complexity of ERA. I will discuss the trade-off between the computational cost and the error in the identified systems, and present numerical results from applications in heat transfer and electrical power systems. Finally, I will also present some ongoing work on extensions to subspace-based system identification using general input sequences.