

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**The Power and Arnoldi Methods in
an Algebra of Circulants**

邀请人: 白中治研究员

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计算数学所报告厅

Abstract:

Circulant matrices play a central role in a recently proposed formulation of three-way data computations. In this setting, a three-way table corresponds to a matrix where each scalar is a vector of parameters defining a circulant. This interpretation provides many generalizations of results from matrix or vector-space algebra. We derive the power and Arnoldi methods in this algebra. In the course of our derivation, we define inner products, norms, and other notions. These extensions are straightforward in an algebraic sense, but the implications are different from the standard matrix case. For example, a matrix of circulants has a polynomial number of eigenvalues in its dimension; but in fact these can all be represented by a carefully chosen canonical set of eigenvalues and vectors. These results and algorithms are closely related to standard decoupling techniques on block-circulant matrices using the fast Fourier transform.

This is joint work with David Gleich and Jim Varah.

欢迎大家参加!