

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:

**Sweeping Preconditioners for the
Helmholtz Equation**

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报告时间: **2010 年 12 月 16 日(周四)**

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Abstract: Numerical solution of the variable coefficient Helmholtz equation in the high frequency regime is a challenging computational problem due to the indefiniteness of the operator and the large size of the discrete system. In this talk, we introduce the sweeping preconditioners for the rapid solution of the variable coefficient Helmholtz equation. The novelties of this new class of preconditioners are a specific order of eliminating the unknowns and efficient representations of the Schur complement matrices. For a problem with N unknowns, these preconditioners take essentially $O(N)$ steps to apply, give iteration numbers that are independent of the frequency, and provide a linear-complexity method for solving the variable coefficient Helmholtz equation. This is a joint work with Bjorn Engquist.

欢迎大家参加!