

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:

**Spectral Element Method for  
Maxwell's Eigenvalue Problem**

邀请人: 唐贻发 研究员

报告时间: **2013 年 11 月 14 日 (周四)**

**下午 15:00-16:00**

报告地点: **科技综合楼三层 311**

**计算数学所报告厅**

## **Abstract:**

**It is well known that conventional edge elements in solving vector Maxwell's equations by the finite element method will lead to the presence of spurious zero eigenvalues. This problem has been addressed for the first order edge element by Kikuchi by the mixed element method. In the meantime, higher-order methods such as the spectral element method (SEM), have also been proposed to solve electromagnetic eigenvalue problems. But these methods also suffer from the presence of spurious zero eigenvalues, even though these methods have a high convergence rate. Here we describe a higher order mixed spectral element method (mixed SEM) for the computation of eigenvalue problem of Maxwell's equations. It utilizes Gauss-Lobatto-Legendre (GLL) polynomials as the basis functions in the finite-element framework with a weak divergence condition. It is shown that this method can suppress all spurious zero and nonzero modes and has spectral accuracy with analytic eigenvalues. Numerous numerical results are given to verify its merits.**

**欢迎大家参加!**