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：

Study on Pseudo-transient Analysis Methods for solving Nonlinear DC Circuits

邀请人： 崔涛 副研究员

报告时间： 2019 年 9 月 11 日（周三）

下午 **15:00-16:00**

报告地点： 数学院南楼二层

226 教室

Abstract：

Recently, engineering productivity in integrated circuit design and development is limited largely by the effectiveness of the computer-aided design（CAD）tools, in which the SPICE-like simulators are perhaps the most important one. In circuit simulation, DC analysis for nonlinear circuits is one of the most fundamental and important tasks. The analysis of nonlinear circuits always needs to solve a system of nonlinear algebraic equations. As circuits of more complexity and mixed types of functionality, these equations are much more difficult to be solved. The Newton-Raphson method is usually employed to obtain the DC operating point. However, the Newton-Raphson method is not globally convergent, which cannot guarantee the convergence unless initial solution is sufficiently close to the true solution. Nowadays, the pseudo-transient analysis (PTA) methods are considered as the most practical methods among all the continuation methods. This research mainly focuses on the algorithms to improve the convergence performance and simulation efficiency of PTA method for solving DC operating points. The researches are from several viewpoints, including pseudo-element viewpoint, numerical integration viewpoint, time-step control viewpoint and so on. All the proposed methods are implemented on our SPICE simulator - WSPICE, and they have been applied to the practical large-scale analog circuits to verify the effectiveness.

欢迎大家参加！