

数学与系统科学研究院

计算数学所学术报告

报告人: **Dr. Hui Liu**

(*Univ of Calgary*)

报告题目:

**Large-scale Reservoir Simulations on
Parallel Computers**

邀请人: 张晨松 副研究员

报告时间: 2015 年 12 月 8 日 (周二)

上午 10:00~11:00

报告地点: 科技综合楼三层

311 报告厅

Abstract:

This talk introduces our work on developing a set of parallel simulators that designed for distributed memory parallel computers. These simulators base on an in-house parallel platform, which provides gridding, data, keyword parsing, well modeling, linear solvers, preconditioners, parallel input and output, and visualization. It is designed to simulate models with billions of grid cells using thousands of CPU cores. At this moment, a black oil simulator, a compositional simulator and a thermal simulator are under development. The black oil simulator can simulate standard black oil model, oil-water model, polymer flooding model, naturally fractured model (including dual porosity, dual permeability and MINC model). Several preconditioners have been proposed to accelerate the solution of linear systems from black oil model and compositional model.

Models with hundreds of millions of grid cells have been benchmarked on IBM Blue Gene/Q supercomputer and other parallel systems. Numerical experiments show that our parallel simulators are scalable, and they are capable of speeding simulations thousands of times faster than serial simulators. With our simulators, simulation of extreme large-scale models is possible.

欢迎大家参加！