

Scientific Computing

- Publications
- Center for Biomedical Computing
- Projects
- Available Master's topics
- Intranet
- People

Talk: ODE solvers - June 18, 2007

On Monday June 18, at 13.00, Ryan Dean will present work he has done with ODE solvers. The talk will be in "Bakrommet" at Simula.

"On the performance of implicit-explicit Runge-Kutta methods in models of cardiac electrical activity"

Talk by:

Ryan Dean (Simula and University of Saskatchewan).

Based on work with Raymond Spiteri

Abstract:

Mathematical models of electric activity in cardiac tissue are becoming an increasingly powerful tool in the study of cardiac arrhythmias. The mathematical models we consider here are based on ordinary differential equations (ODEs) that describe the ionic currents at the myocardial cell level. Generating an efficient numerical solution of these ODEs is a challenging task. In this talk, we examine the efficiency of the numerical solution of four cardiac electrophysiological models using implicit-explicit Runge-Kutta (IMEX-RK) splitting methods. We find that a variable step size implementation of a particular IMEX-RK method, ARK5, clearly outperforms the methods most commonly used in practice.