An overview of numerical methods for stochastic ordinary differential equations

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In any modelling situation when an attempt is made to take into account noise effects the most appropriate mathematical formulation is that of a stochastic differential equation.

In this talk we give an overview of the state of the art of numerical methods for the solution of stochastic ordinary differential equations. We will give a brief overview of how such stochastic equations arise naturally from the modelling process and then focus on the following issues.

The design of effective high order methods.

How to cope with stiffness in both the deterministic and stochastic components.

Efficient variable stepsize implementations.

At all stages we will try to highlight the differences and similarities between what happens in the deterministic case and in the stochastic case.