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：

Modified equations for Hamiltonian systems

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计算数学所报告厅

Abstract：

The numerical solution of an ordinary differential equation is the exact solution of a slightly different equation, called the modified equation. If the original differential equation is Hamiltonian and the numerical method is symplectic, then the modified equation is also Hamiltonian; the corresponding energy is called the modified energy.

The modified energy can be computed analytically but this is a complicated procedure. Skeel and co-workers found a remarkable method for computing the modified energy numerically and showed that the results shed light on the behaviour of the numerical integrator. We revisit their method and simplify it by using Richardson interpolation allowing us to attain very high order. This allows us to capture the exponentially small terms in backward error analysis causing the energy to drift.

This is joint work with Per Christian Moan.

欢迎大家参加！