

*Department of Mathematics,
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Computational Geometric Mechanics Research Seminar

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Control of Parasitism in Geometric Numerical Integrators

Abstract:

Geometric numerical integrators are numerical methods used to solve ordinary and partial differential equations that preserve geometric properties of the underlying dynamical systems. These methods are designed to accurately approximate the trajectories of the systems while conserving important physical or mathematical properties such as energy, momentum, symplecticity, or volume. In this talk, I will be talking about two classes of geometric numerical integrators both of which suffer from parasitic instabilities namely G-symplectic general linear methods for Hamiltonian systems and Variational Integrators for degenerate Lagrangian systems. I will also discuss the strategies to control the effect of parasitism in these methods.

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