

Seminário de sistemas dinâmicos e estocásticos

IMECC - UNICAMP

The Liouville operator for Euler Point Vortices

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Resumo:

Euler Point Vortices are a classical model, consisting in a Hamiltonian system of ODEs driven by a singular vector field. It is a classical result that dynamics is globally well-defined for almost all initial configurations with respect to volume of phase space, and by Liouville's theorem it defines a measure-preserving flow. We consider the infinitesimal generator L (Liouville operator) of the Koopman group of unitaries associated to such flow, defining L on a set of observables vanishing on the singularity set in phase space. These observables turn out to be a core for L , thus providing a strong uniqueness result and some insight on the dynamical properties of point vortices. We also discuss whether smaller sets of observables, akin to ones relevant in the study of Gaussian solutions of 2d Euler's equations, might still form a core: the problem is related to singular solutions of the point vortices system, including collapses and splitting of vortices.

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- Passcode: 15729

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