

## Variational (dynamical) discretisations of metriplectic systems

*Friday, 5 April 2024 10:00 (30 minutes)*

In this work we present a variational structure preserving discretisation method for metriplectic systems. These are composed of two parts: a Hamiltonian flow and a dissipation. The dissipation is built based on the Casimirs of the Hamiltonian system. A weak formulation of the Hamiltonian flow is defined. Based on this, a variational semi-discretisation in space is performed, leading to a finite dimensional Hamiltonian system. We discuss the possibility of introducing a dynamical variational discretisation by leveraging the geometrical description of the weak Hamiltonian flow, in the spirit of the Dynamical Low Rank method.

Work in collaboration with Cecilia Pagliantini.

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