

## **Energy-variational structure in evolution**

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In this talk, we explore the energy-variational framework for general evolution equations and their approximation via a novel minimizing movement scheme. We present several recent results that build on this structure, including existence theorems for large classes of systems, selection principles, and convergence results for numerical approximations.

Through a range of examples—including fluid dynamics, interface evolution, and elasticity—we demonstrate how various measure-valued solvability concepts from the literature can be significantly simplified by exploiting the energy-variational structure of the underlying partial differential equations. In particular, we show that in several cases, a measure-valued solution—typically represented by a high-dimensional Young measure—can be equivalently reformulated using an energy-variational solution involving only a scalar auxiliary variable.

These examples reveal that such a structural property is not incidental but reflects a recurring feature across many types of evolution equations.