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A Discrete Energetic Variational Approach to Generalized Diffusions, Gradient flows and Beyond

In this talk, we present a systematic framework of deriving variational schemes for generalized diffusions and gradient flows, by a discrete energetic variational approach, which performs an energetic variational approach (EnVarA) at a semi-discrete level. The resulting semi-discrete equation inherits the variational structures from the continuous energy-dissipation law directly. In particular, we apply such an approach to construct variational Lagrangian schemes and particle methods for porous medium type generalized diffusion and some gradient flow system, such as the Allen-Cahn equation and equation of liquid crystals. Numerical examples show the advantages of our schemes in capturing singularities, thin diffuse interfaces, and free boundaries.

This is joint work with Professor Chun Liu (IIT).

Ort: Zoom video conference   Zeit: Freitag, 19.06.2020 um 15:00 Uhr

**You are cordially invited to this lecture. Request the Zoom link from
anja.schloemerkemper@mathematik.uni-wuerzburg.de**

gez. Anja Schlömerkemper