

Energetic Variational Approaches (EnVarA) for Active Materials and Reactive Fluids

Chun Liu

Illinois Institute of Technology,
Chicago, Illinois

Abstract: Active/reactive fluids convert and transduce energy from their surrounding into a motion and other mechanical activities. These systems are usually out of mechanical or even thermodynamic equilibrium. One can find such examples in almost all biological systems. In this talk I will develop a general theory for active fluids which convert chemical energy into various types of mechanical energy. This is the extension of the classical energetic variational approaches for mechanical systems. The methods will cover a wide range of both chemical reaction kinetics and mechanical processes. This is a joint work with Yiwei Wang.