Temperature effects and Ideal Gas Stokes flow

In this work, we will introduce a general framework to derive thermodynamics of a fluid mechanical system, which guarantee the consistence between the energetic variational approaches with the laws of thermodynamics. In particular, we will focus on the coupling between the thermal and mechanical forces. We follow the framework in the case of the ideal gas and present the existences of weak solutions to this thermodynamic system.

This is joint work with Chun Liu (Illinois Institute of Technology).