Variational Principle in the Dynamics of Soft Matter

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Many equations describing the dynamics of soft matter are derived from a variational principle proposed by Onsager in his celebrated paper on the reciprocal relation [1,2,3]. This includes Stokes equation for hydrodynamics, Smoluchowski equation for Brownian motion, Cahn-Hilliard equation for phase separation (model H), elasto-diffusion equation for gels, Leslie-Ericksen equation for liquid crystals etc. Here I discuss how this principle is useful in solving practical problems and the implication of this principle [4–8].

References


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