1052-35-42 **Qiang Du** (qdu@math.psu.edu) and **Manlin Li*** (li_m@math.psu.edu). *ON THE STOCHASTIC IMMERSED BOUNDARY METHOD WITH AN IMPLICIT INTERFACE FORMULATION.*

In this paper, we present a consistent and rigorous derivation of some stochastic fluid-structure interaction models based on an implicit interface formulation of the stochastic immersed boundary method. Based on the fluctuation-dissipation theorem, we provide the proper form of the noise to be incorporated in some deterministic hydrodynamic fluid-structure interaction models in either the phase field or level-set framework so as to capture the fluctuation effect near equilibrium. (Received August 06, 2009)