1083-76-222 **Christel Hohenegger*** (`choheneg@math.utah.edu`), 155 S 1400 E Room 233, Salt Lake City, UT 84112-009, and **Scott A. McKinley**. *Fluctuating hydrodynamics of immersed particles in a Maxwellian fluid.*

Multibead passive microrheology aims at characterizing fluid properties via statistically measurable quantities like mean square displacement and autocorrelation. To correctly model the correlations between particles, it is necessary to simulate the fluid itself and to include a thermally fluctuating force in the Navier Stokes equations. For a viscous fluid, this has been successfully achieved by the stochastic immersed boundary method of Atzberger *et. al.*. Our first goal is to extend this algorithm to a biological fluid. Therefore, we develop a stochastic immersed boundary method for a Maxwellian fluid (viscoelastic). Second, we seek to find a signal due to the fluid's memory in the statistics of the particles velocity autocorrelation. (Received August 28, 2012)