1048-70-234 **Sorin M. Mitran*** (mitran@unc.edu), Department of Mathematics, CB 3250, Chapel Hill, NC 27599. *Continuum-microscopic computation of biological material mechanical properties.* Preliminary report.

Mechanical properties of biological materials exhibit large variability - one of the fundamental reasons underlying this behavior is associated with changes in the microscopic structure. A computational framework for coping with changing microscopic configurations is presented based upon coupling of a classical continuum model (e.g. membranes, beams) with a microscopic model of the system. The key question of how to identify statistics of the microscopic model is addressed and a method based upon systematic sampling and identification of the associated probability distribution functions is presented. The computational framework is applied to the modeling of the cytoskeleton and microtubules. (Received February 09, 2009)