1020-65-226   **Padmanabhan Seshaiyer*** (`padmanabhan.seshaiyer@ttu.edu`), Box 41042, Department of Mathematics & Statistics, Texas Tech University, Lubbock, TX 79409-1042. *Computational mechanics of nonlinear biological soft-tissues.* Preliminary report.

In this talk, we will present computational methods for solving boundary value problems arising from modeling geometrically and materially nonlinear biological soft-tissues. The associated nonlinear equations are solved by the finite element method in conjunction with the Newton-Raphson approach. Computational experiments will be presented for various benchmark applications involving coupled biological processes that are characterized by solid mechanics, fluid dynamics as well as fluid-structure interaction. (Received August 28, 2006)