1067-92-201 **Eva M Strawbridge*** (emstrawb@math.uchicago.edu), University of Chicago, Deparment of Mathematics, 5734 South University Ave., Chicago, IL 60637. *Compatibility of Slender Body Theory and Surface Traction.*

I will present a careful argument for the compatibility of slender body theory, specifically Kirchhoff rod theory, and surface traction due to viscous drag from a Stokes flow. This is the first careful analysis of this theory and will show the precise case when the two theories are compatible and when they are not. This work has direct applications to mathematical biology, in particular DNA mechanics and dynamics and flagellar motion of sperm and microorganisms. (Received August 02, 2010)