1125-92-828   **Eva Marie Strawbridge*** (`strawbem@jmu.edu`), MSC 1911, James Madison University, Harrisonburg, VA 22807. *Development and Analysis of a Worm-like Model.*

The past forty years have witnessed an ever-increasing interest in applications of slender-body dynamics (such as Kirchhoff rod theory), in particular with regard to the shape, movement, or material parameters of biomolecules or materials. In most applications, hydrodynamic interactions (i.e. surface traction often approximated by resistive force theory) have been of utmost importance since the biologically relevant scales usually result in very small Reynolds number. However, the formulation of classical Kirchhoff slender-body assumes no surface traction in the development of the constitutive relation. We will discuss an asymptotic approach to reconciling this apparent inconsistency. We will also discuss the addition of alternative constitutive relations to make this model more applicable to the study of swimming worms. (Received September 12, 2016)