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Eva Marie Strawbridge* (strawbem@jmu.edu), James Madison University, Department of Mathematics and Statistics, MSC 1911, Harrisonburg, VA 22807, and **Charles Wolgemuth**. *The compatibility of slender bodies and surface traction at low Reynolds number.*

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 and provide velocity bounds for which the compatibility of Kirchhoff rod and resistive force theory hold. (Received September 16, 2013)