Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Configurations and dynamics of membrane-bound elastic filaments[1] WILSON LOUGH, University of Wisconsin-Madison — Changes in the curvature and topology of cell membranes are responsible for numerous biological processes. Many of these changes seem to be driven by interactions with thin filament-like protein structures which form on the surface of membranes. While there are a number of proposed mechanisms, how exactly the filament-membrane interactions produce changes in curvature remains an open question. The feasibility of proposed mechanisms can be be investigated by modeling the filament as a thin elastic rod which is confined to the membrane surface. The interplay between the geometries of the the surface and the filament give rise to complex distributions of force and torque which are believed to play a crucial role in reshaping the membrane. We discuss the mechanics of surface-bound filaments and present a collection of analytical and numerical results.

[1]NSF: DMS-1661900

Wilson Lough
University of Wisconsin-Madison

Date submitted: 01 Aug 2019 Electronic form version 1.4