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Jason S Howell* (howe114@cmu.edu), Department of Mathematical Sciences, 5000 Forbes Avenue, Pittsburgh, PA 15213, and **Varun Gudibanda** and **Justin T Webster**. *Dynamics of the Inextensible Inverted Flag with Piston-Theoretic Forcing Term*.

In this talk we discuss observations of the dynamics of an inextensible elastic beam immersed in potential flow. The boundary configuration of the beam is that of an inverted flag, i.e. a free leading end and clamped trailing end with respect to the direction of the flow. The coupled nonlinear PDE system is simplified with an assumption (piston theory) that describes the effect of the flow on the beam, and reduces the system to a single nonlinear PDE for the beam dynamics.

The dynamics of the inverted inextensible flag were analyzed using a spectral approach, as well as a standard finite element approach. Comments on observations in the dynamics, such as the onset of instabilities and non-equilibrium steady states, will be discussed. (Received September 23, 2018)