

In this talk, we discuss the autonomous motion of a 1-D closed elastic string immersed in the 2-D Stokes flow, known as the 2-D Stokes Immersed Boundary Problem. It features singular forcing supported on a free-moving boundary. We recast the string motion into a contour dynamic formulation in the Lagrangian coordinate, and show its local well-posedness under mild regularity and geometric assumptions on the initial string configuration. We also show its global well-posedness and exponential stability, provided that the initial data is sufficiently close to an equilibrium configuration. This is a joint work with Fang-Hua Lin.