

1046-35-1105

Ricardo Cortez* (rcortez@tulane.edu), Department of Mathematics, Tulane University, 6823 St. Charles Ave, New Orleans, LA 70118. *Regularized Stokeslets and other elements with applications to biological flows.*

Biological flows, such as those surrounding swimming microorganisms or beating cilia, are often modeled using the Stokes equations due to the small length scales. The organism surfaces can be viewed as flexible interfaces imparting force on the fluid. I will present the Method of Regularized Stokeslets and other elements that are used to compute Stokes flows interacting with immersed flexible bodies or moving through obstacles. The method treats the flexible bodies as sources of force or torque in the equations and the resulting velocity is the superposition of flows due to all the elements. Exact flows are derived for forces that are smooth but supported in small spheres, rather than point forces. I will present the idea of the method, some of the known results and several examples from biological applications. (Received September 14, 2008)