國立中山大學應用數學系
傑出系列演講

講　者：賴明治教授
　　　　交通大學應用數學系
講　題：Immersed boundary methods for vesicle
　　　　dynamics
時　間：2014/03/27（星期四）15：30～16：20
地　點：理學院四樓理 SC 4009-1 室
茶　會：15:00 於理 SC 4010 室（系辦公室）

摘要

In this talk, we would like to present a simple immersed boundary method to simulate the dynamics of 2D and 3D axisymmetric inextensible vesicles in Navier-Stokes flows. Instead of introducing a Lagrange's multiplier to enforce the vesicle inextensibility constraint, we modify the model by adopting a spring-like tension to make the vesicle boundary nearly inextensible so that solving for the unknown tension can be avoided. We also derive a new elastic force from the modified vesicle energy and obtain exactly the same form as the originally unmodified one. A series of numerical tests on the present schemes have been conducted to illustrate the applicability and reliability of the method. In particular, we study of viscosity and inertial effects on tank-treading to tumbling motion under shear flow. We also investigate the shapes of vesicles in Poiseuille flow to study the effects of the reduced volume, the confinement, and the mean flow velocity. The numerical results are shown to be in good agreement with those obtained in theory and experiments.

中山大學應用數學系
敬 請 公 告！ 歡 迎 參 加！
應用數學系：http://math.nsysu.edu.tw
校園地圖：http://web.nsysu.edu.tw/files/11-1000-1503.php?Lang=zh-tw
交通資訊：http://www.nsysu.edu.tw/files/90-1000-7.php?Lang=zh-tw

應用數學系　　　　　　　校園地圖　　　　　　　交通資訊