國立交通大學應用數學系
學術演講公告

主講人：胡偉帆 教授(中興大學應數系)

講　　題：Chaotic tumbling motion in the Quincke rotor dynamics

時　　間：108 年 3 月 26 日(星期二) 下午 14:00 –15:00

地　　點：(光復校區) 科學一館 223 室

茶　　會：當天下午 1:30 (科學一館 205 室)

Abstract

　　In this talk, we study the dynamics of a particle immersed in a weakly conducting fluid under the influence of external uniform electric field. The leaky dielectric model is adopted to describe the electric field and the fluid motion equation governing by the Stokes equations is highlighted to model the particle electrohydrodynamics. Our theoretical analysis for predicting the spontaneous Quincke rotation of a circular particle is exactly consistent with the result obtained from the classic Quincke models. For a shape-anisotropic particle, our numerical result shows that the particle can undergo complicated dynamics compared to circular particles. In particular, we find that the shape anisotropy provides a source of nonlinearity leading to chaotic tumbling motion, while such chaos occurs through a period-doubling cascade of the particle angular velocity.

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