“Exact Solution of the Plane Flow with Unsteady Vortex, Brownian Motion, Diffusion and Osmosis”

Professor Keying Guan
Department of Mathematics
Beijing Jiaotong University

Abstract

Based on the conception "pseudo-potential" of the incompressible plane flow, an exact solution is given to the Euler's equation with an arbitrarily given potential force. With the KAM theory and the second order Melnikov function, it is proved that this solution describes infinitely many unsteady vortices distributed periodically on the whole plane and the Brownian motion appeared along the border region which separating different vortices. This exact solution can explain why the Brownian motion, the diffusion and osmosis can appear in the macroscopic static water.

Refreshments will be served in CAB 649 at 2:30 p.m.