SEMINÁRIO DE EQUAÇÕES DIFERENCIAIS

Analysis of a Navier-Stokes-Cahn-Hilliard system modeling vesicle-fluid interactions

FRANCISCO GUILLÉN GONZALEZ

Universidad de Sevilla

21/06/2016 (Terça-Feira)

16:00 horas

Sala 221 do IMECC

Resumo: In this talk, we introduce a model describing the dynamic of vesicle membranes within an incompressible viscous fluids in 3D domains. The system consists of the Navier- Stokes equations, with an extra stress tensor depending on membranes interactions, coupled with a Cahn-Hilliard phase-field equation associated to a bending energy plus a penalization related to the area conservation. This model has a dissipative in time free-energy which leads, in particular, to prove the existence of global in time weak solutions. We analyze the large-time behavior of the weak solutions. By using a modied Lojasiewicz-Simon's result, we prove the convergence as time goes to infinity of each (whole) trajectory to a single equilibrium. Finally, the convergence of the phase variable is improved by imposing more regularity on the domain and initial phase. This work has been done in collaboration with Blanca Climent-Ezquerra, from Universidad de Sevilla.