Analysis Seminar

On the well-posedness of an inviscid fluid-structure interaction model

By

Amjad Tuffaha

(American University of Sharjah, United Arab Emirates)

Abstract: We consider the Euler equations on a domain with free moving interface. The motion of the interface is governed by a 4th order linear Euler-Bernoulli beam equation. The fluid-structure interaction dynamics are realized through normal velocity matching of the fluid and the structure in addition to the aerodynamic forcing due to the fluid pressure.
We derive a-priori estimates and construct local-in-time solutions to the system in the Sobolev space H^r, with r>5/2. We also establish uniqueness in the Sobolev space H^r with r>3.
An important consequence of the existence theorem is that the Taylor-Rayleigh instability does not occur. This is joint work with Igor Kukavica.

Date: Tuesday, December 6, 2022
Time: 16:00-17:00, GMT+3
Place: SA141 - Mathematics Seminar Room