basque center for applied mathematics

Working Seminar
(APDE)

Thursday, September 17th, 12:00-13:00

Marco Bravin

BCAM

ON SOME PROPERTIES FOR AN INCOMPRESSIBLE, NON-VISCOUS IN-OUT FLOW IN A 2D DOMAIN

In this talk I will present some recent results on the properties of an in-out flows in a perfect two dimensional fluid. In particular I present existence of solutions in different classes of regularity and I will conclude with the study of the asymptotic limit of some shrinking sources and sinks. This work is motivated by an open question left open by Judoviˇc in [2].
The system consists of an Euler type system in a bounded domain with some holes where non-homogeneous boundary conditions are prescribed. I will present how to ex- tend some classical existence results in this setting and then I will consider the case when the holes shrink to points. The boundary conditions lead to the creation of some point sources and sinks associated with some vortex points in the limit. Similar type of systems have been already study by Chemetov and Starovoitov in [1], where a different approximation approach was considered.

References

[1] Chemetov, N. V., Starovoitov, V. N. (2002). On a Motion of a Perfect Fluid in a Do- main with Sources and Sinks. Journal of Mathematical Fluid Mechanics, 4(2), 128-144.
[2] Judovi, V. I. A two-dimensional non-stationary problem on the flow of an ideal in- compressible fluid through a given region. (Russian) Mat. Sb. (N.S.) 64 (106) 1964 562588.

Link: https://eu.bbcollab.com/guest/fbebf6301b4f49f18d7285610e1e6f10

The link to the session will be active from 11:30.

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