



UNIVERSITÀ DEGLI STUDI DI TRENTO

Dipartimento di Ingegneria Civile
e Ambientale

Seminar in Applied Mathematics

Exact Riemann solutions to the Euler equations in ducts with discontinuous cross-section

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Hrs	11:30
Room	2R, Mesiano

Abstract

We determine completely the exact Riemann solutions for the system of Euler equations in a duct with discontinuous varying cross-section. The crucial point in solving the Riemann problem for hyperbolic systems is the construction of the wave curves. To address the difficulty in the construction due to the non-strict hyperbolicity of the underlying system, we introduce the L-M and R-M curves in the velocity-pressure phase plane. The behavior of the L-M and R-M curves for six basic cases are fully analyzed. Furthermore, we observe that in certain cases the L-M and R-M curves contain bifurcations which lead to the non-uniqueness of the Riemann solutions. We pick up the physically relevant solution by comparing the possible exact solutions with the averaged numerical solutions to the axisymmetric Euler system

You are most welcome to attend

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