



FMRC Fluid Mechanics Seminar

An overview of adverse pressure gradient turbulent boundary layers

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Tuesday November 4th 2014, 15.00

ITU Uçak ve Uzay Bilimleri Fakültesi, TAV Konferans Salonu

Abstract: In industrial applications or in nature, the complex essence of wall turbulence is further complicated by the effects of several external factors (pressure gradients, roughness, centrifugal and Coriolis forces...). The transposition of our knowledge acquired through the study of canonical flows to more complex ones is not straightforward and raises several questions. Such is the situation for one important category of complex turbulent wall flows: adverse pressure gradient turbulent boundary layers (APG TBLs). The objective of the seminar is to give an overview of our state of knowledge of APG TBLs with an emphasis on physical understanding. The seminar will cover important physical characteristics, relevant dynamic similarity parameters, scaling and layer-structure of APG TBLs. Counter-intuitive behaviors and some misconceptions we often have about APG TBLs will also be highlighted.

Biography: Yvan Maciel is a Full Professor in the department of Mechanical Engineering of Laval University, Canada. He received his B.Eng. degree in Mechanical Engineering at McGill University, Canada, his M.Sc. degree in Aeronautics at Caltech, USA and his Doctoral degree at École Nationale Supérieure de l'Aéronautique et de l'Espace (SUPAERO), France, in 1994. He joined Laval University in 1995, first as a postdoctoral fellow and then as a professor in the same year. His main research program aims at improving our knowledge of various turbulent flows of interest for industrial applications. He authored several publications on adverse pressure gradient turbulent boundary layers, swirling jet flow, rotating channel flow and flows through hydraulic turbines, as well as on techniques to measure and analyze turbulent flows. He has also recently started a research program on the study of the flow through heart valves.

