

## FDRG Seminar

# Simulating disturbance evolution in boundary layers using a computationally efficient velocity-vorticity method

presented by

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We review a velocity-vorticity formulation of the incompressible Navier-Stokes equations that lends itself to the development of an efficient numerical simulation method for studying disturbance evolution in boundary layers. A novel feature of the formulation is that the no-slip conditions are implemented by means of fully equivalent integral conditions on the vorticity. This makes it relatively easy to incorporate various forms of flow control that involve wall motion; for example, we have simulated the development of disturbances when there are prescribed spanwise wall oscillations, passive compliant surfaces that respond to pressure fluctuations, and interactively coupled MEMS devices. A significant portion of the talk will be given over to technical matters concerned with the mathematical formulation and its numerical discretization, in order to give some indication of how the simulation method is implemented. But we will also provide an illustration of results that have been obtained for a variety of physical configurations which have been studied to date.

Date: Wednesday 30<sup>th</sup> November  
Time: 4.00pm – 5.00 pm  
Location: Building 204, Room 505  
Curtin University, Bentley Campus

No RSVP required. For queries please email:  
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