

FLUW

Fluid Dynamics @ USyd

2016 Seminar Series

Double International Guest Presentation

Thursday 21st January

1130-1300 hrs. School of AMME Seminar Room N311

Presentation 1

Shock-particle interaction to explosive particle dispersion

Prof. S. Balachandar

University of Florida, USA



Abstract –

Compressible flow resulting from an explosive release of energy is a classic problem. During and after the second world war, due to interest in better understanding nuclear explosions, this problem attracted some of the best scientists of that time - G.I. Taylor, von Neumann, Hans Bethe, and L.I. Sedov. The presence of particles, as in a hybrid multiphase explosive or dispersal of casing/liner fragments greatly complicates the problem.

The interaction of between the gas and the particulate field is significantly complicated due to the highly unsteady nature of the problem, interaction of compressible flow features such as shocks and contacts with the particles, compressibility effects of high Mach number and particle-particle interaction at large volume fractions.

Presentation 2

The stability of the boundary-layer flow over rotating spheres and cones

Prof. S. Garrett

University of Leicester, UK



Abstract –

The stability properties of the boundary layer over the rotating disk has been an active topic in the literature since the 1950s. In the early 2000s it was realised that the flows over rotating mechanical components and ballistics (often simply cones and spheres) could be related directly to the flows over the disk.

This re-established a link between the now extensive fundamental literature on the disk and real-world engineering design. This presentation will explore the connections between the flows over rotating disks, cones and spheres, including the limits of the application of the disk literature to these other geometries. This will also close with a summary of an ongoing analytical study of the rotating-sphere flow.

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