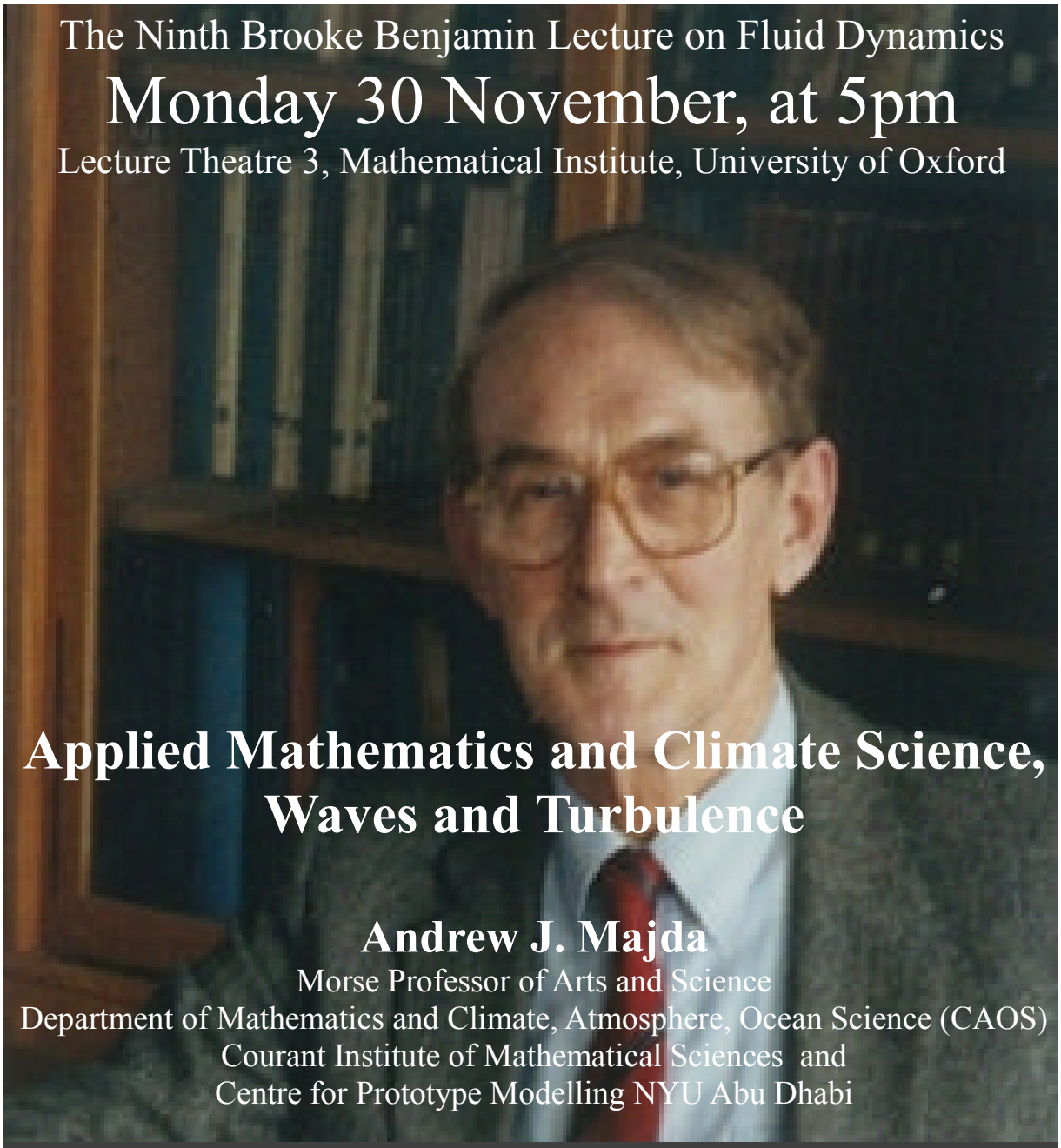
The Ninth Brooke Benjamin Lecture on Fluid Dynamics

Monday 30 November, at 5pm

Lecture Theatre 3, Mathematical Institute, University of Oxford



Applied Mathematics and Climate Science, Waves and Turbulence

Andrew J. Majda

Morse Professor of Arts and Science

Department of Mathematics and Climate, Atmosphere, Ocean Science (CAOS)

Courant Institute of Mathematical Sciences and

Centre for Prototype Modelling NYU Abu Dhabi

Abstract: In this lecture, a modern applied mathematics perspective on climate science, turbulence, and other complex systems is presented. This modus operandi involves the symbiotic interaction of rigorous mathematical analysis, judicious qualitative models, novel numerical algorithms, combined with the constraints of observations and experiments with the goal of improved physical understanding of the complex system. The lecture includes the application of these ideas to qualitative models for waves and turbulence as well as novel strategies for prediction, state estimation and uncertainty quantification. A theme of the lecture is the development of these ideas in a hierarchy of models for the Madden Julian Oscillation, an intermittent planetary scale travelling wave which is the dominant component of tropical intraseasonal variability with huge societal impact in our global warming world.

All are warmly invited to attend the lecture and reception that follows.

CDT PDE

EPSRC Centre for Doctoral Training in Partial Differential Equations