DEPARTMENT OF APPLIED MATHEMATICS
APPLIED SEMINAR SERIES 2007

The Seminar Series of the Department of Applied Mathematics, UNSW, Sydney is dedicated to the announcement, dissemination and discussion of research in mathematics and its applications. A fundamental aim of the Seminar Series is to feature lectures that inform in a manner that makes the subject accessible to the audience, including non-specialists.

SPEAKER: Professor Philip Broadbridge, Australian Mathematical Sciences Institute, Melbourne, Australia.

TITLE: Applications–inspired mathematics.

Abstract: This title arose from a mini-symposium of the Aust MS annual meeting of 2006. It led me to reflect from my own experience on how application–driven mathematics evolves. The standard paradigm of new practical applications leading to new mathematical questions, being clearly answered, perhaps after defining new mathematical structures, rarely seems to apply in practice. Dead ends, paradoxes, conundra and serendipity are really what prevent applied maths from being boring. Even if a practical problem can be fully solved by well established mathematical techniques, a minor change of the practical setting can lead to uncharted mathematical territory. Some examples will be given of scientific problems that have been solved using annoyingly bad mathematical techniques that had no right to succeed, and others that lead to innocuous-looking mathematical problems that have defied attempts at solution.

I have made progress on some problems that I identified in 2006. These are in the areas of boundary value problems for unsaturated flow, information theory of PDEs and consistent finite–difference schemes for 4th order diffusion problems. Some mention may be made also of tumour cell chemotaxis and of Boson fields in an accelerating universe.

TIME AND VENUE: 2pm, Wednesday 5 December 2007, Room 3084, Red Centre.

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