

# Conferencia

# SANTALÓ 2008

La *Facultad de Ciencias Matemáticas* y la *Revista Matemática Complutense*, patrocinan la conferencia anual Santaló, impartida cada año por un profesor de reconocido prestigio. Esta conferencia marca el inicio de la actividad docente e investigadora de la Facultad en cada año académico.

## Alfio Quarteroni

Ecole Polytechnique Federale de Lausanne  
Laussane — Switzerland

### Mathematical Models for Technology, Medicine and Sport

Mathematical models are nowadays used to describe, simulate and control many diverse phenomena of complex nature. Some noticeable instances that will be addressed in this lecture are concerned with applications in aerodynamics, hydrodynamics, cardiovascular flow problems, and problems arising from sport competition.

The interest in the use of mathematical modelling and numerical simulation in the study of the cardiovascular system (and its inherent pathologies) has greatly increased in the past few years. We will describe both the mechanical and biochemical interaction of blood flow with arterial walls and their role in the onrise and development of vascular pathologies.

In sport, mathematical models are often used to enhance performances of athletes as well as to improve the design of vehicles that are used in the various disciplines. In particular we will mention our results in the design of America's cup yachts as well as Olympic rowing hulls and swim suites.

Finally, we will consider the use of mathematical models in geophysical applications, more specifically in the framework of oil fields exploration.

The interplay between analytical models, numerical methods, and advanced algorithms for scientific computing will be highlighted.

**JUEVES, 16 DE OCTUBRE DE 2008**

**13:00 HORAS**

**AULA S-118 "MIGUEL DE GUZMÁN"**

**FACULTAD CC. MATEMÁTICAS**

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