



# **Optimal Control and Applications in Operations Research**

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Date: Thursday, May 8<sup>th</sup>, 2008

Time: 12 pm

Room: Lecture Theatre 11

**Abstract:** The historical background to modern optimal control theory will be outlined, starting from the brachistochrone problem (Johann Bernoulli 1697) and the Calculus of Variations. Further developments led after a few centuries to Pontryagin's Maximum Principle in 1961 and important further results in differential geometry techniques after 1980. This research has allowed the development of modern optimal control theory that has spanned broad areas such as flight control, robotic processes, financial planning and many applications in operations research. Some interesting applications in the area of operations research and management science will be briefly described, e.g. a straightforward optimal financial spending problem, the optimal presentation of a lecture using slides, and the optimal crackdown of illicit drug markets.

**Bio:** Alan Zinober is Professor of Nonlinear Control Theory in the Department of Applied Mathematics, The University of Sheffield. He obtained his PhD in nonlinear control theory at the University of Cambridge. His research interests include sliding mode control, realisation theory, nonlinear dynamics and topics in operations research. He has been awarded many EPSRC grants in control and optimisation, and is currently studying the optimal efficiency of a scroll motor and the sliding mode control of spacecraft dynamics.