数学与系统科学研究院

科学与工程计算国家重点实验室短期课程

报告人：　Prof. James Nester

（ 台湾中央大学，jmnester@gmail.com ）

报告题目：

Einstein's Geometric Theory of Gravity

邀请人：　　刘润球 研究员

报告时间： **2016 年 9 月 29 日起，每周四、周日**

19：00-21：00，约 12 周

报告地点：

晨兴数学中心 110 教室

Abstract:

The aim of the course is that students will have a solid understanding of the essential fundamental physical and mathematical foundations of GR.

The first part of this course is an introduction to Einstein's geometric theory of gravity, general relativity. The second part includes certain advanced topics.

I. Physics in flat spacetime: special relativity, electromagnetism, the energy-momentum tensor & accelerated observers.

Mathematics of curved space time: Differential Geometry: tensors, covariant derivative/affine connection/parallel transport, metric, geodesic, curvature.

Einstein's geometric theory of gravity: equivalence principle, Einstein's equations, weak field, energy-momentum & angular momentum.

Black holes, cosmology & gravitational waves.

II. Advanced topics including: the variational principle and the Hamiltonian formulation, the initial value constraints, the positive energy theorem and quasi-local energy momentum.

The necessary background is that expected of advanced undergraduate and beginning graduate students of mathematics or physics.

主要教材： **C.W. Misner, K. Thorne & J.A. Wheeler, Gravitation (Freeman, San Francisco, 1973)**

欢迎大家参加！