Mathematics Colloquium

Topic: **Critical Phenomena in Dimension Four**

Speaker: **Gordon Slade, University of British Columbia**

Time: 16:15 - 17:15, 14 May 2014

Venue: Room 371, Geography Building, 3663 Zhongshan Road North, Shanghai
(华东师范大学中山北路校区，地理楼 371 室)

ABSTRACT OF THE TALK

The subject of critical phenomena and phase transitions in physics has been an important source of inspiration and problems for mathematics for over half a century, especially in probability but also in other areas. Critical phenomena are typically studied in the context of specific models, and an interesting feature is the dependence on spatial dimension. This talk presents the general context for recent joint work with Roland Bauerschmidt and David Brydges, which develops a rigorous renormalisation group method and applies it to the analysis of the critical behaviour of two 4-dimensional models: the weakly self-avoiding walk and the ϕ^4 spin model.

BIOGRAPHY

Gordon Slade is a Canadian mathematician and Professor at the University of British Columbia. His research lies at the crossroads of probability theory and statistical mechanics, especially critical phenomena. He is known for the development of the lace expansion method, which has been used to obtain a detailed understanding of critical phenomena in various high dimensional models, including self-avoiding walk and percolation. More recently, his research has centred on the development of a rigorous renormalisation group method.