LISBOA | UNIVERSIDADE DE LISBOA

CENTRO DE MATEMÁTICA E APLICAÇÕES FUNDAMENTAIS
Av. Prof. Gama Pinto 2, 1649-003 LISBOA, PORTUGAL   Tel. (351) 217 904 700

Mês de: FEVEREIRO 2014

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 6 de Fevereiro (quinta-feira), às 13:30h, na Sala B3-01

Self-repelling fBm, Polymer Conformations and k-tolerant random walks

Wolfgang Bock
(CMAF)

Abstract:

We present an extension of the Edwards model for conformations of individual chain molecules in solvents in terms of fractional Brownian motion, and discuss the excluded volume effect on the end-to-end length of such trajectories or molecules.

Moreover the model is extended to K-tolerant random walks, which forbid k-fold or higher order coincidences. We propose a scaling law for the end-to-end length R of paths as a function of time for arbitrary Hurst index H and spatial dimension d. We derive a recursion relation for the scaling law as a function of the spatial dimension and verify that it is satisfied by that law. Finally we show that it predicts the correct critical dimension for which fBm has no k-tuple points. Some first numerical simulations are in good agreement with the formula.

Local:
**Instituto para a Investigação Interdisciplinar
da Universidade de Lisboa**
Av. Prof. Gama Pinto, 2
1649-003 Lisboa

HOSP. SANTA MARIA

Av. Prof. Gama Pinto

Entrada

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