

UNIVERSITY OF CRETE
DEPARTMENT OF MATHEMATICS AND APPLIED MATHEMATICS

COMPUTATIONAL MATHEMATICS SEMINAR

12:15am, Thursday, 11 January, 2018
Room A-303

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PDE option pricing with stochastic correlations

Correlation between financial quantities plays an important role in pricing financial derivatives. Existing popular models assume that correlation either is constant, or exhibits some deterministic behaviour. However, market observations suggest that correlation is a more complicated process. We consider correlation structures guided by a stochastic mean-reverting process. We derive the related Partial Differential Equation (PDE) problems for pricing several types of financial derivatives, and solve them by accurate and efficient numerical methods. We study various numerical issues arising. We also consider correlation structures guided by regime switching, and derive and solve the associated PDE problems. We also study the effect of model parameters to the prices. We compare the results from the two types of correlation structures to each other and to results from Monte-Carlo simulations.

Joint work with Nat H.C. Leung