



Cemapre

Centro de Matemática Aplicada à Previsão e Decisão Económica

ESR 6

One open Marie Curie Early Stage Researcher (ESR, PhD) position ISEG, UTL, Lisbon

The research group of Prof. Dr. Maria do Rosário Grossinho is part of CEMAPRE-Centre for Applied Mathematics and Economics, based at the Mathematics Department of ISEG, Technical University of Lisbon. CEMAPRE, a centre with the highest classification within the Portuguese R&D system, pursues multidisciplinary research in areas like Actuarial Science, Econometrics, Time Series, Financial Mathematics, Analysis, Dynamical Systems.

The STRIKE network (www.itn-strike.eu) will provide a unique opportunity for a total of 12 researchers in early stages of their careers to study emerging research topics in the field of computational finance under the prestigious scheme of Marie Curie Initial Training Network.

In the frame of FP 7 Marie Curie Initial Training Network STRIKE, the Technical University of Lisbon invites applications for an open Marie Curie ESR fellowship. The aim of STRIKE is to deeper understand complex (mostly nonlinear) financial models and to develop effective and robust numerical schemes for solving linear and nonlinear problems arising from the mathematical theory of pricing financial derivatives and related financial products. This aim will be accomplished by means of financial modelling, mathematical analysis and numerical simulations, optimal control techniques and validation of models.

The fellow to be recruited by the Technical University of Lisbon will be employed with full social security coverage and all benefits in accordance with Marie Curie ITN fellowships regulations (highly competitive remuneration plus allowances for living and mobility expenses). As an Early Stage Researcher the applicant will register to read for a PhD of the Mathematics Department of ISEG, Technical University of Lisbon. The duration of the fellowship is 36 months for the Early Stage Researchers.

Research activities will all be carried out at the Mathematics Department of ISEG, Technical University of Lisbon in close collaboration with the STRIKE network. The fellow will spend 3 months visiting a STRIKE collaboration partner.

The fellow will join the STRIKE community, take part in the STRIKE events and will perform an individual research project studying the analysis of Lévy market models and related PIDEs.

Details

Eligibility:	To this position applies a mobility rule. The respective candidate must not have worked for more than twelve months in Portugal within the last three years and must not have been awarded a doctoral grade.
Starting date:	July 1, 2013
Duration:	36 months
Salary/conditions:	according to Marie Curie ITN standards

Short description:	<p>Partial integro-differential equations (PIDEs) appear in finance in option pricing with discontinuous models. These equations generalize the Black-Scholes PDE when the continuous diffusion dynamics for the underlying price is replaced by a Lévy process dynamics (including jumps). The integral operator in the PIDE propagates a possible irregularity of the solution. For many Lévy models (such as Variance Gamma) or for Barrier options, the option price may not be sufficiently regular. This drawback led authors to consider option prices as weak solutions of the PIDEs.</p> <p>Tasks and methodology: problem of existence of weak and viscosity solutions for parabolic PIDEs related with option pricing in financial models based on exponential Lévy processes; efficiency of numerical schemes for solving such PIDEs.</p> <p>Results: existence of weak and discontinuous viscosity solutions and related comparison principles which allow the construction of appropriate and efficient numerical schemes.</p>
Job requirements:	<p>Master's degree in mathematics or a relevant field. Only researchers are eligible who at the time of selection by the host organisation: have not yet been awarded the doctoral degree and are within the first four years (full-time equivalent) of their research careers starting with date of obtaining your master's degree or equivalent. Experience in quantitative finance is required.</p>
Host institute:	<p>CEMAPRE and Mathematics Department of ISEG, Technical University of Lisbon, Lisbon, Portugal.</p>
Supervisor:	<p>Prof. Dr. Maria do Rosário Grossinho</p>
How to apply:	<p>Please submit your letter of application, complete résumé, a short summary of your scientific projects so far, electronic copies of your relevant certificates and diplomas, a proof of your proficiency in English and finally two letters of recommendation to Prof. Dr. Maria do Rosário Grossinho</p>
Deadline for application:	<p>March 31, 2013</p>
Further information:	<p>Please feel free to contact the supervisor Prof. Dr. Maria do Rosário Grossinho (Email)</p>