

Centrum Wiskunde & Informatica (CWI) has a vacancy in the Scientific Computing research group for a talented

PhD student (4 years)

on the subject of numerical methods for Backward Stochastic Differential Equations, a hedge test in incomplete markets and risk management.

Job description

The research will be carried out in the context of the H2020 EU Marie Curie Initial Training Network project named "WAKEUPCALL", which will provide a unique opportunity, for 6 researchers in early stages of their careers, to study cutting-edge research topics in the field of computational finance and risk management, under the prestigious scheme of the Marie Curie European Industrial Doctorates (EID). The aim of the WAKEUPCALL project is to deeper understand issues in financial risk management, and in the mathematical theory of pricing financial derivatives (and the related products). The PhD candidate will join the WAKEUPCALL community, and take part in the WAKEUPCALL events in Europe.

In an EID project a close cooperation with industry is mandatory, therefore a stay of 18 months with the industrial partner is expected and prescribed. For the current vacancy, the industrial partner is VORtech BV, www.vortech.nl, headed in Delft, the Netherlands. This is an engineering firm, with a key expertise on mathematical modeling, efficient computing, and scientific software implementation. It is expected that the PhD student will work closely together with the industrial partner, VORtech, at any stage of her/his PhD, and not only during the compulsory stay at the VORtech offices.

The research group "Scientific Computing" at CWI will host the PhD candidate. Scientific Computing relates to the robust and efficient numerical solution of mathematical equations on state-of-the-art hardware. Risk management and financial engineering are at the intersection of numerical analysis and stochastics.

The PhD student, supervised by prof. Cornelis Oosterlee, will work on understanding hedging strategies in incomplete markets, by means of Fourier, wavelet and Monte Carlo pricing methods, fast computation of sensitivities on many core systems such as GPUs. Results are to be published in international journals and presented at major conferences and they must lead to a PhD thesis within 4 years.

At the end of the first year, the PhD student will be formally evaluated, to assess her/his ability of obtaining the PhD. The PhD title will be granted by Delft University of Technology, upon a positive defense of the PhD thesis.

Requirements

Potential candidates have a master degree in applied mathematics, quantitative finance, or computational sciences (with specialization in computational finance). They have a strong interest in financial mathematics and they are willing to further increase their knowledge of finance, and software development/engineering.

Preferred qualifications for candidates include excellent grades, research talent (as proven by the master thesis), affinity with the financial world, programming and personal ambition.

Candidates are expected to have and prove an excellent command of English, together with good academic writing and presentation skills.

According to the regulations for mobility within the Marie Skłodowska Curie programme, at the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date.

Terms and conditions PhD Student

The terms of employment are in accordance with the Dutch Collective Labour Agreement for Research Centres ("CAO-onderzoeksinstellingen"). The PhD student will be employed with full social security coverage and s/he will have all benefits provided for in the Marie Curie ITN fellowships regulations, including a highly competitive remuneration, living allowances and mobility expenses.

As an Early Stage Researcher the applicant will register for a PhD at the Faculty of Electrical Engineering, Mathematics and Computer Science of the Delft University of Technology.

CWI offers attractive working conditions, including flexible scheduling and help with housing for expat employees.

Please visit our website for more information about our terms of employment:

www.cwi.nl/terms-of-employment

Application

Applications can be sent before 15 April 2015 to apply@cwi.nl. Applications should include a detailed CV, a motivation letter, a list of your MSc courses and grades, a copy of your master thesis, and preferably a list of publications. For residents outside the EER-area, a TOEFL English language test may be required.

For more information about the vacancy, please contact Prof. Cornelis Oosterlee, email c.w.oosterlee@cwi.nl.

For more information about CWI, please visit www.cwi.nl or watch our video "[A Fundamental Difference](#)" about working at CWI.

For more information about VORtech, please visit www.vortech.nl or watch the video "We are VORtech" about VORtech.

About Centrum Wiskunde & Informatica

Centrum Wiskunde & Informatica (CWI) is the Dutch national research institute for mathematics and computer science and linked to the Netherlands Organisation for Scientific Research (NWO). The mission of CWI is to conduct pioneering research in mathematics and computer science, generating new knowledge in these fields and conveying it to trade, industry, and society at large.

CWI is an internationally oriented institute, with 160 scientists from approximately 27 countries. The facilities are first-rate and include excellent IT support, career planning, training, and courses.

CWI is located at Science Park Amsterdam that is presently developing into a major location of research in the natural sciences in The Netherlands, housing the sciences of the University of Amsterdam and of the Vrije Universiteit as well as several other national research institutes next to CWI.

Research group

For more information, please check the CWI [webpage](#).