The Working Group on Risk - CREAR, with the support of the IDS dpt, Institut des Actuaires, LabEx MME-DII and the group BFA (SFdS), has the pleasure to invite you to the Seminar by:

Prof. Stefan WEBER

Director of the Institute of Probability and Statistics - Leibniz Universität Hannover

Wednesday, February 27, 2019, 12:30pm – 1:30pm (CET)

at **ESSEC La Défense (CNIT) – Amphi 202**
and **ESSEC Asia Pacific – Level 3, classroom 7**

"PRICING OF CYBER INSURANCE CONTRACTS IN A NETWORK MODEL"

We develop a novel approach for pricing cyber insurance contracts. The considered cyber threats, such as viruses and worms, diffuse in a structured data network. The spread of the cyber infection is modeled by an interacting Markov chain. Conditional on the underlying infection, the occurrence and size of claims are described by a marked point process. We introduce and analyze a new polynomial approximation of claims together with a mean-field approach that allows to compute aggregate expected losses and prices of cyber insurance. Numerical case studies demonstrate the impact of the network topology and indicate that higher order approximations are indispensable for the analysis of non-linear claims. This is joint work with Matthias Fahrenwaldt and Kerstin Weske.

Financial support from ESSEC Research Center and LabEx MME-DII is gratefully acknowledged.

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For any information, please contact
Stéphanie MARTINEZ
(01 34 43 37 97 / martinez@essec.edu)

http://crear.essec.edu/working-group-on-risk

Prof. Stefan WEBER

Director of the Institute of Probability and Statistics - Leibniz Universität Hannover, Germany

Stefan Weber is a Professor of Insurance and Financial Mathematics and the Director of the Institute of Probability and Statistics at Leibniz Universität Hannover. He is also a member of the board of directors of the interdisciplinary House of Insurance, a research center on actuarial science at Leibniz Universität Hannover, and a member of the executive committee of the German Society of Actuarial and Financial Mathematics. Until 2009, he was an Assistant Professor (tenure-track) at the School of Operations Research and Information Engineering at Cornell University in Ithaca, New York. He received his Ph.D. in mathematics (summa cum laude) from Humboldt-Universität zu Berlin in 2004. He holds a Diploma in Mathematics and a Master of Arts in Economics. Stefan's research focuses on quantitative risk management with applications in financial and actuarial mathematics as well as in engineering. Recently, he has been studying systemic and emerging risk in complex systems, e.g. in financial, traffic and data networks.

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Modèles Mathématiques et Économiques de la Dynamique, de l'Incertitude et des Interactions

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