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:

Thursday March 31, 2022

12:30 pm (CET)

Prof. Stéphane ROBIN

LPSM, Sorbonne Université, Paris

"An exchangeable model for bipartite (ecological) networks"

Dual format: ESSEC Paris La Défense (CNIT),
Room 344, and via Zoom,
please click here (Password/Code : WGRisk)

Bipartite networks make it possible to describe the interactions between two types of entities, such as plants and pollinating insects. In ecology, understanding the organization of such networks aims at better understanding the functioning, or even the future, of an ecosystem. A common practice is to calculate a particular topological indicator on the observed network, then compare its value to a distribution of values obtained by resampling the network. The classical re-sampling framework requires the hypothesis of exchangeability of species, that is, that they are interchangeable within their class. We will present the bipartite model with expected degree distribution (BEDD) that constitutes a generic exchangeable model for bipartite networks. We will show that we can establish the asymptotic distribution of the number of occurrences of a given pattern in a BEDD network. We will also introduce a general family of U-statistics on these networks and discuss their asymptotic distribution. These results will be illustrated by the analysis of plant-pollinator networks. This is a joint work with S. Ouadah, P. Latouche, T. Le Minh, S. Donnet and F. Massol.

For any information:
Melissa Bagri – 0134433797 - bagri@essec.edu
http://crear.essec.edu/working-group-on-risk

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Prof. Stéphane ROBIN

Laboratory of Probability, Statistics and Modeling (LPSM)
Sorbonne Université, Paris, France

Dr. Stéphane Robin (PhD & HDR) is Professor of Statistics at Sorbonne Université, and member of the *Stochastics and Biology Group*, one of the six research teams of the Probability, Statistics and Modeling Lab. (LPSM — UMR CNRS 8001, Sorbonne Université). Before joining LPSM, he was Senior researcher (DR) at the Institut National de la Recherche Agronomique (INRA) and AgroParisTech. Stéphane is working at the interface between statistical modeling and life sciences, with a focus on applications in ecology. Part of his research is devoted to the inference of models with latent variables. Such models include heterogeneous random graph models and joint species distribution models. He is also interested in change-point detection, along sequences and trees.