Berlin Mathematical School

BMS Friday Colloquium

Friday 27 October 2017 at 14:15
Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin
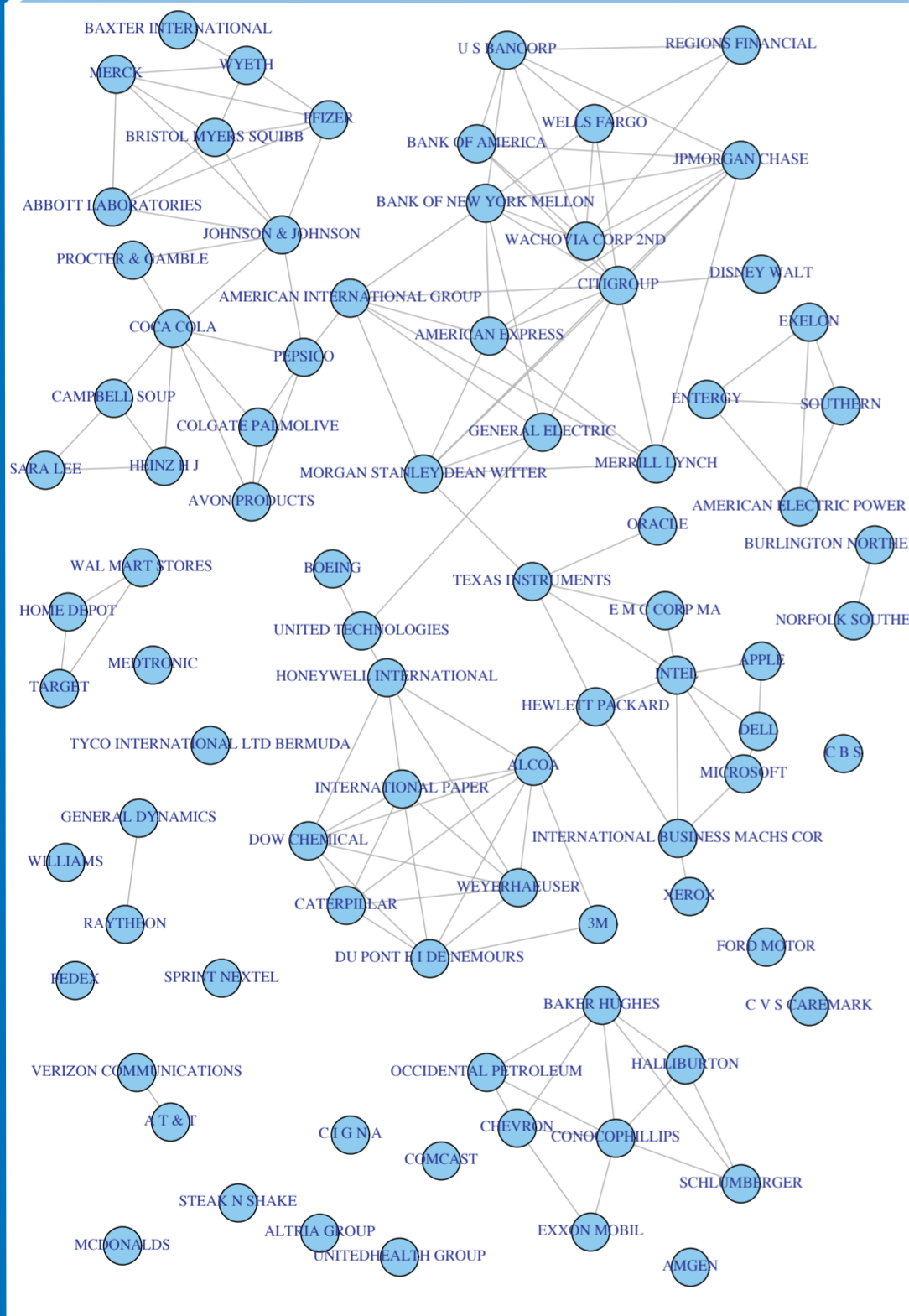
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Graphical Models

Graphical models can be traced back to at least Ising (physics) and Wright (genetics) and are statistical or probabilistic models, which describe complex relationships among a potentially large number of random variables. The key to this description is the encoding of conditional independence statements in a mathematical graph associated with the model. This encoding ensures modularity and simplifications in specification, interpretation, communication, and computation associated with the application of the models. Graphical models are now applied in an abundance of contexts, for example in digital communication, machine learning, causal inference, image analysis, genetics, decision support, social sciences, and forensic science. Similarly, a variety of graphs have been associated with the models, including undirected graphs, directed acyclic graphs, bidirected graphs, and mixed graphs with several types of edges involved.

In his lecture, Lauritzen shall give a brief overview of the historic development of graphical models and their applications, the variety of graphs used, some highlights of existing mathematical results, and current important research topics and challenges.

Steffen L. Lauritzen is professor of statistics at the University of Copenhagen. His main research interests include graphical models and their applications. Lauritzen's awards include the 1996 Guy Medal in Silver, the Knight of the Order of Dannebrog in 1999, the 2001 DeGroot Prize, and a Humboldt Research Award in 2016. He was elected to the Royal Danish Academy of Sciences and Letters in 2008 and elected as a Fellow of the Royal Society in 2011.

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