

## **Complex Networks: How Can We Understand Their Behaviour?**

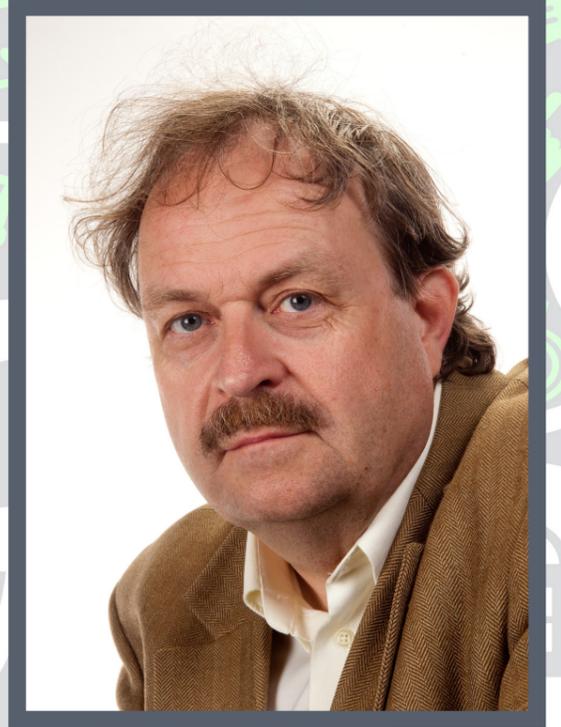
**Speaker:** Frank den Hollander  
Leiden University, The Netherlands

**Date:** Wednesday, 13 May 2015

**Time:** 6:30 - 7:30 pm

**Venue:** Possibility Room, Level 5  
National Library Building  
100 Victoria Street  
Singapore 188064

**Free Admission**



### **Abstract**

Everywhere in the world people are connected via networks. Think of Internet, Facebook and Twitter, but also of road traffic, transport of merchandise, mobile telephones and electricity grids. Such networks have become indispensable to our modern society. However, they are generally very complex: huge in size, intricate in structure, very dynamic, often overloaded, sometimes unpredictable, and at times even vulnerable. This is worrying.

To better understand complex networks, to model them adequately, and to control and optimize them in an efficient manner, new ideas are required. Mathematics is a powerful tool that has lots to offer. In this talk I describe a few examples of complex networks, discuss a few key questions, and give an impression of what mathematics is able to do. The combination "stochastics" (the art of hazard) and "algorithmics" (the art of computation) form the basis of a new perspective on networks. The ultimate goal is to design and build intelligent networks.

The talk is aimed at a non-mathematical audience with an interest in science.

### **About the Speaker**

Frank den Hollander is a professor of mathematics at Leiden University in The Netherlands. His research focuses on probability theory, ergodic theory, statistical physics, population dynamics and complex networks.

Frank den Hollander is a member of the Royal Dutch Academy of Sciences. He has been awarded numerous national and international research grants, including an ERC Advanced Grant and a ten-year consortium grant by the Dutch Ministry of Education, Culture and Science called NETWORKS. He has supervised 13 graduate students and 33 postdocs, has published over 150 papers, has served on strategic advisory boards across Europe, and has lectured across the world. He is the author of three monographs, and is Fellow of the American Mathematical Society and of the Institute of Mathematical Statistics.



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