1124-60-145 **Jose H. Blanchet*** (jose.blanchet@columbia.edu), 500 W 120th St., Mudd Building, IEOR, 3rd Floor, New York, NY 10027, and **Mike Giles** (mike.giles@maths.ox.ac.uk), Oxford University, Oxford, United Kingdom. *Multilevel Monte Carlo for Spatial Extremes.*

Applications such as weather models call for extrapolation techniques of extremes with spatial dependence. To preserve the standard univariate extreme value theory, one must consider random fields, M, which are characterized by a stochastic fixed point equation involving n i.i.d. (centered and scaled) copies of M. The solution of such fixed point equation is said to be a max-stable field, which can be represented as infinite maxima of randomly weighted i.i.d. copies of a so-called generator. A generator is any random field satisfying mild regularity conditions. For example, a Gaussian random field can serve as a generator, also the solution of a PDE with random input can be used as a generator.

In this talk, after discussing basic properties of max-stable fields, we will show how recently developed Multilevel Monte Carlo methods can be used to estimate sample path expectations of max-stable fields, without any bias, and with the same computational cost which as that of its generator. Simply put, we provide computational tools that make max-stable processes as easy-to-work-with as working with its generator. We discuss max-stable fields generated by stochastic PDEs, for which exact estimation procedures of independent interest are also presented in this talk. (Received September 06, 2016)