

## **Multifractal analysis of some families of random functions motivated by the study of the network traffic**

Karoly Simon, Budapest University of Technology and Economics

We study the Legendre and Large Deviation multifractal spectra of infinite sums of independent positive random functions  $Z(t)$  which can be represented as an infinite sum of random functions  $Z_k(t)$  having the following properties:

- $Z_k(t)$  increases in between two consecutive jumps,
- the jumps of  $Z_k(t)$  follow a Poisson point process,
- the increments are non-stationary and correlated.
- the graph of  $Z_k(t)$  in between two consecutive jumps is determined by a self-affine family of functions.

As a special case our result includes the network traffic generated by the Cubic model of TCP.

Our work is a generalization of some of the results of a paper M. Rams and J.L. Vehel (2013).

**This is a joint work with S. Molnar (Dept. of Telecommunications and Media Informatics TU Budapest), P. Mora (Morgen Stanley) and J. Komjathy (TU Eindhoven)**