Location: GÖR 226

## SOE 1: Scientific Impact and Models for Growth of Science (Topical Talk Roberta Sinatra)

Time: Monday 9:30–10:00

Topical TalkSOE 1.1Mon 9:30GÖR 226Quantifying the evolution of individual scientific impact —•ROBERTA SINATRA — Central European University, Budapest, Hungary — Northeastern University, Boston, MA, USA

Despite the frequent use of numerous quantitative indicators to gauge the professional impact of a scientist, little is known about how scientific impact emerges and evolves in time. In this talk we quantify the changes in impact and productivity throughout a career in science and show that impact, as measured by influential publications, is distributed randomly within a scientist's sequence of publications. This random impact rule allows us to formulate a stochastic model that uncouples the effects of productivity, individual ability and luck, unveiling the existence of universal patterns governing the emergence of scientific success. The model assigns a unique individual parameter Q to each scientist, which is stable during a career and accurately predicts the evolution of a scientist's impact, from the h-index to cumulative citations. Finally, we show that the Q-parameter is more predictive of independent recognitions, like prizes, than cumulative citations, hindex or productivity.