Contribution ID: **17** Type: **not specified**

A gentle introduction to combinatorial stochastic processes (with applications to Finance and Economics)

Friday, 12 September 2025 11:00 (2 hours)

The theme of this course is the allocation of n objects (or elements) into g categories (or classes), discussed from several viewpoints. We shall start from descriptions of the world as facts (taking place or not), and events as propositions (true or not) about facts (taking place or not). Not everything in the world is known, and what remains is a set of possibilities. For this reason, events can be probabilized and probability theory plays a fundamental, but often underestimated, role in our scientific theories. Indeed, it turns out that problems in economics and finance can be formulated and solved using these methods.

Textbook: U. Garibaldi, E. Scalas, Finitary Probabilistic Methods in Econophysics, Cambridge University Press, 2010.

Syllabus: The following topics will be addressed

Individual and statistical descriptions

The Pólya urn process

The Ehrenfest–Brillouin model

Applications to stylized models in economics and finance

The Zipf–Simon–Yule process

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