INSALATE DI MATEMATICA

presents

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Noise-induced oscillations for the mean-field dissipative contact process

Abstract: In this talk, we will introduce a dissipative version of the contact process with mean-field interaction admitting a simple epidemiological interpretation. In particular, we will focus on the thermodynamic limit of the process, providing a law of large numbers (propagation of chaos) and a central limit theorem for the corresponding normal fluctuations. These results reveal that it is the noise, which is only present in the finite-size system and is internal to the system, that induces persistent oscillatory behaviors reminiscent of the emergence of pandemic waves in real epidemics.

Keywords: contact process · noise-induced oscillations · propagation of chaos · diffusion approximation

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"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)