SOE 23: Innovation Dynamics (Invited Talk Vittorio Loreto)

Time: Thursday 15:00–15:45

Location: H37

Invited Talk   SOE 23.1   Thu 15:00   H37

Modelling innovation as expansion into the adjacent possible

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Innovation is a fundamental factor in the evolution of biological systems, human society and technology. By opening new possibilities, innovations pave the way for further innovations in an evolutionary process that Kauffman has called "expansion into the adjacent possible". In this talk we propose a simple mathematical model where the implications of this expansion are studied quantitatively and tested on four data sets capturing various facets of innovation in social and technological systems: the early adoption of new words in texts, the edit events of Wikipedia pages, the emergence of tags in annotation systems, and listening to new songs in online music catalogues. By quantifying the distinctive features of innovation via the adjacent possible, our results provide a starting point for a deeper understanding of this potentially important mechanism of biological, linguistic, cultural, and technological evolution.