

Dynamical systems

The research activity is focused on statistical properties of dynamical systems, in a wide perspective, encompassing both deterministic and stochastic evolutions.

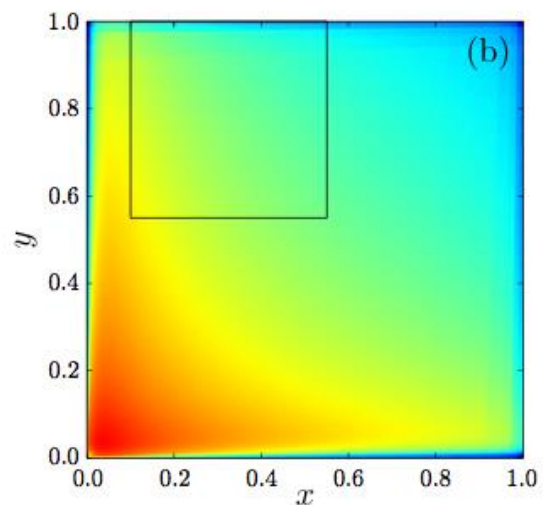
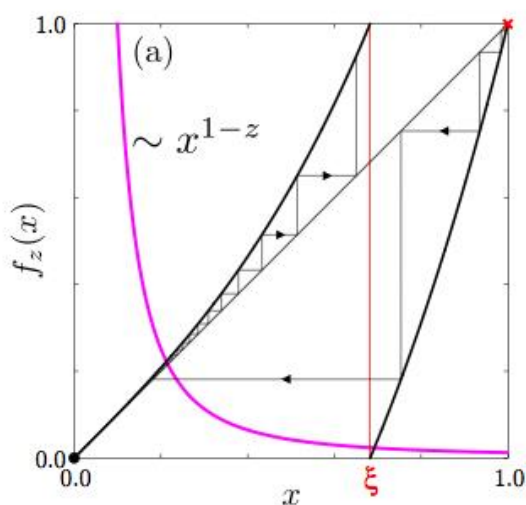
While we have reached quite a profound understanding of important cases (regular *integrable* systems, or fully chaotic *unstable* models) the behaviour in between is still rich of open problems, of physical significance, since this *middle land* is thought to be generic. The same situation appears in the stochastic setting, when we modify the picture of simple random walks, for instance. A typical signature of this intermediate situation is the occurrence of *anomalies*, like long time tails, weak ergodicity breaking, anomalous transport and so on. A more detailed understanding of these features would not only enrich our mathematical understanding of dynamics: as a matter of fact anomalous behaviour has been observed in a huge variety of contexts, from animal foraging to migration of cell constituents, from epidemic spreading to fluctuations in stock markets.

Detailed research proposals may be found at the link

http://www.dfm.uninsubria.it/artuso/Roberto_web_page/theses.html

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A weakly chaotic map

Coupled intermittent map: phase space

References:

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