Statistical Physics and Anomalous Dynamics of Foraging

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A question that attracted a lot of attention in the past two decades is whether biologically relevant search strategies can be identified by statistical data analysis and mathematical modeling. A famous paradigm in this field is the *Lévy hypothesis.* It states that under certain mathematical conditions Lévy dynamics, which defines a key concept in the theory of anomalous stochastic processes, leads to an optimal search strategy for foraging organisms. This hypothesis is discussed very controversially in the current literature. I will review examples and counterexamples of experimental data and their analyses confirming and refuting it. Motivated by this debate is own work about biophysical modeling of bumblebee flights under predation thread based on experimental data analysis, which I briefly outline.