



TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

Dipartimento di Fisica



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Seminar

Monday, 8 April 2024 - h. 15:00

Fisica della Materia room (Department of Physics)

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“The uses of memory for olfactory search in turbulent environments”

Abstract

Animals often use odors to send messages that travel across long distances, carried by the wind. At the receiver's end, the signal arrives attenuated and mangled by the turbulent atmospheric flow. Nevertheless, insects are able to decode the sequence of sparse odor encounters and use this information about the source location to build a successful search strategy. A key role in this process is played by the memory that the searcher has to keep about the history of previous odor detections. Here, we show in a computational model of olfactory search that finite-state controllers, very simple algorithmic devices endowed with a minimal memory, are rich enough to explain the occurrence of several behavioral patterns that are indeed observed in nature and have a great potential for robotic applications.

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