ON-OFF INTERMITTENCY AND ATTRACTOR BUBBLING IN THE ISING MODEL WITH RANDOM IN TIME TEMPERATURE

L. Stępień[a], A. Krawiecki[a], and R. A. Kosiński[a,b]

[a]Faculty of Physics, Warsaw University of Technology,
Koszykowa 75, PL-00-662 Warsaw, Poland

[b]Central Institute for Labour Protection,
Czerniakowska 16, PL-00-701 Warsaw, Poland

9.7 cm

The Ising model with global ferromagnetic coupling and thermal bath dynamics is considered, with uniform in space temperature varying randomly in time in the neighbourhood of the critical point. The system is studied both by numerical simulations with a large number of spins, and analytically in the mean field approximation. The time series of magnetization show a sequence of laminar phases during which the magnetization is close to zero, corresponding to paramagnetic phase, and large bursts with non-zero magnetization, corresponding to abrupt occurrence of ordered phase. It is shown that this behaviour is an example of on-off intermittency and attractor bubbling which appear as collective phenomena due to interaction of a large number of spins subject to random temperature.

13.4 cm

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Corresponding author :
Lech Stępień

Address for correspondence :
Wydział Fizyki Politechniki Warszawskiej
Koszykowa 75
00-662 Warszawa

Email address :
lstepien@if.pw.edu.pl