Nonlinear Sciences > Chaotic Dynamics

In-flight dissipation as a mechanism to suppress Fermi acceleration

Diego F. M. Oliveira, Marko Robnik

(Submitted on 1 Nov 2010)

Some dynamical properties of time-dependent driven elliptical-shaped billiard are studied. It was shown that for the conservative time-dependent dynamics the model exhibits the Fermi acceleration [Phys. Rev. Lett. 100, 014103 (2008)]. On the other hand, it was observed that damping coefficients upon collisions suppress such phenomenon [Phys. Rev. Lett. 104, 224101 (2010)]. Here, we consider a dissipative model under the presence of in-flight dissipation due to a drag force which is assumed to be proportional to the square of the particle's velocity. Our results reinforce that dissipation leads to a phase transition from unlimited to limited energy growth. The behaviour of the average velocity is described using scaling arguments.

Comments:	4 pages, 5 figures
Subjects:	**Chaotic Dynamics (nlin.CD)**
Cite as:	**arXiv:1011.0419v1 [nlin.CD]**

Submission history

From: Diego Fregolente Mendes de Oliveira [view email]
[v1] Mon, 1 Nov 2010 19:31:05 GMT (594kb)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.

Download:

- PDF
- PostScript
- Other formats

Current browse context:
nlin.CD
< prev | next >
new | recent | 1011

Change to browse by:

nlin

References & Citations

- NASA ADS

Bookmark(what is this?)