Nonlinear Sciences > Chaotic Dynamics

Resonances and Twist in Volume-Preserving Mappings

H.R. Dullin, J.D. Meiss

(Submitted on 3 Mar 2010)

The phase space of an integrable volume-preserving map with one action is foliated by a one-parameter family of invariant tori. Perturbations lead to chaotic dynamics with interesting transport properties. We show that near a rank-one resonant torus the mapping can be reduced to a volume-preserving standard map. This map is a twist map only when the frequency map crosses the resonance curve transversely. We show that these maps can be reduced using averaging theory to the usual area-preserving twist or nontwist standard maps. In the volume-preserving setting the twist condition is shown to be distinct from the nondegeneracy condition of used in KAM theory.

Comments:	laTeX, 9 figures
Subjects:	**Chaotic Dynamics (nlin.CD)**
Cite as:	**arXiv:1003.0922v1 [nlin.CD]**

Submission history

From: James D. Meiss [view email]

[v1] Wed, 3 Mar 2010 21:58:52 GMT (1311kb,D)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.

Download:

- PDF
- Other formats

Current browse context:
nlin.CD
< prev | **next >**
new | recent | 1003

Change to browse by:

nlin

References & Citations

- CiteBase

Bookmark(what is this?)