

One Parameter Scaling Theory for Stationary States of Disordered Nonlinear Systems

Joshua D. Bodyfelt, Tsampikos Kottos, Boris Shapiro

(Submitted on 9 Mar 2010)

We show, using detailed numerical analysis and theoretical arguments, that the normalized participation number of the stationary solutions of disordered nonlinear lattices obeys a one-parameter scaling law. Our approach opens a new way to investigate the interplay of Anderson localization and nonlinearity based on the powerful ideas of scaling theory.

Comments: 5 pages, 3 figures submitted to Physical Review Letters

Subjects: **Disordered Systems and Neural Networks (cond-mat.dis-nn)**; Statistical Mechanics (cond-mat.stat-mech); Adaptation and Self-Organizing Systems (nlin.AO)

Cite as: [arXiv:1003.1959v1](#) [cond-mat.dis-nn]

Submission history

From: Joshua Bodyfelt [[view email](#)]

[v1] Tue, 9 Mar 2010 19:29:13 GMT (406kb,D)

Which authors of this paper are endorsers?

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

cond-mat.dis-nn

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1003](#)

Change to browse by:

[cond-mat](#)

[cond-mat.stat-mech](#)

[nlin](#)

[nlin.AO](#)

References & Citations

- [CiteBase](#)

Bookmark([what is this?](#))

[CiteULike logo](#)

[Connotea logo](#)

[BibSonomy logo](#)

[Mendeley logo](#)

[Facebook logo](#)

[del.icio.us logo](#)

[Digg logo](#)

[Reddit logo](#)