Mathematics > Algebraic Topology

# Dynamics of random selfmaps of surfaces with boundary

Seung Won Kim, P. Christopher Staecker

*(Submitted on 21 Jul 2011)*

We use Wagner's algorithm to estimate the number of periodic points of certain selfmaps on compact surfaces with boundary. When counting according to homotopy classes, we can use the asymptotic density to measure the size of sets of selfmaps. In this sense, we show that "almost all" such selfmaps have periodic points of every period, and that in fact the number of periodic points of period n grows exponentially in n. We further discuss this exponential growth rate and the topological and fundamental-group entropies of these maps.
Since our approach is via the Nielsen number, which is homotopy and homotopy-type invariant, our results hold for selfmaps of any space which has the homotopy type of a compact surface with boundary.

| | |
|---|---|
| Comments: | 12 pages |
| Subjects: | **Algebraic Topology (math.AT)**; Dynamical Systems (math.DS) |
| MSC classes: | 37E15, 55M20, 37C20 |
| Cite as: | **arXiv:1107.4312 [math.AT]** |
| | (or **arXiv:1107.4312v1 [math.AT]** for this version) |

## Submission history

From: P. Christopher Staecker [view email]
**[v1]** Thu, 21 Jul 2011 16:51:31 GMT (12kb)

*Which authors of this paper are endorsers?*