Lizana, C.; Ranter, W.
Topological obstructions for robustly transitive endomorphisms on surfaces. (English)
adv. math. 390, article ID 107901, 39 p. (2021)

Summary: We address the problem of necessary conditions and topological obstructions for the existence of robustly transitive endomorphisms on surfaces. Concretely, we show that a weak form of hyperbolicity (namely, partial hyperbolicity) is a necessary condition in order to have robustly transitive displaying critical points, and the only surfaces supporting this class of systems are either the torus or the Klein bottle. Furthermore, we also prove that the induced action by a partially hyperbolic endomorphism in the first homology group has at least one eigenvalue with modulus larger than one.

MSC:
37D30 Partially hyperbolic systems and dominated splittings
37D20 Uniformly hyperbolic systems (expanding, Anosov, Axiom A, etc.)
08A35 Automorphisms and endomorphisms of algebraic structures
35B38 Critical points of functionals in context of PDEs (e.g., energy functionals)

Keywords:
robustly transitive endomorphisms; critical set

Full Text: DOI

References:
[12] Lizana, C.; Ranter, W., New classes of \((C^1)\) robustly transitive maps with persistent critical points (2019)
[14] Potrie, R., Partial hyperbolicity and attracting regions in 3-dimensional manifolds (2012), PEDECIBA-Universidad de La Republica-Uruguay, PhD thesis

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