

Contribution on the theory of  $C^1$ -robustly transitive  
endomorphisms displaying critical points

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**Abstract**

We will present recent results given by different authors about necessary and sufficient conditions in order to obtain  $C^1$  robustly transitive endomorphisms. In [LR17], Lizana and Ranter proved for surfaces that these kind of maps displaying critical points has to be partially hyperbolic and they gave some topological obstructions. In [LPPR22], the authors proved for manifolds of higher dimension that these maps admit a dominated splitting. In this talk we will comment about some examples of robustly transitive endomorphisms displaying critical points on surfaces introduced in [LR19] and we will exhibit a new class of examples in higher dimension that are robustly transitive displaying critical points and admitting a dominated splitting but are not partially hyperbolic (work in progress joint with E. Lima).

**References**

- [LPPR22] Lizana, C.; Potrie, R.; Pujals, E. R.; Ranter, W. Robust transitivity and domination for endomorphisms displaying critical points. arXiv:2106.03291v3, 2022.
- [LR19] Lizana, C.; Ranter, W. New classes of  $C^1$  robustly transitive maps with persistent critical points. arXiv:1902.06781, 2019.
- [LR17] Lizana, C.; Ranter, W. Topological obstructions for robustly transitive endomorphisms on surfaces. Adv. Math. 390 (2021), Paper No. 107901, 39 pp.

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