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Title: What's new in Lorenz attractors

Abstract: Abstract. Ever since its discovery in 1963 by Lorenz [1], the Lorenz attractor has been playing a central role in the research of singular flows, i.e., flows generated by smooth vector fields with singularities. In this talk I shall survey about old and new results describing the dynamics of this kind of attractors from the topological as well as the ergodic point of view. I will end sketching the proof of my newest result establishing that in a C^1 -open and densely family of vector fields (including the classical Lorenz attractor), if the point masses at singularities are not equilibrium states, then there exists a unique equilibrium state supported on Λ . In particular, there exists a unique measure of maximal entropy for the flow $X|_{\Lambda}$. This corresponds to a joint work with Fan Yang and Jiagang Yang.

References

1. [1] E. N. Lorenz. Deterministic nonperiodic flow. *J. Atmosph. Sci.*, 20:130–141, 1963.
2. [2] M. J. Pacifico, F. Yang and J. Yang. Entropy theory for sectional hyperbolic flows. *Ann. Inst. Henri Poincaré, Anal. Non Linéaire*, 38 (2021), 1001–1030.
3. [3] M.J. Pacifico, F. Yang and J. Yang. Existence and uniqueness of equilibrium states for systems with specification at a fixed scale: an improved