

On the Structure of Attractors of Contracting Lorenz Maps  
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ABSTRACT:

We study the topological attractors and the non-wandering set of Contracting Lorenz maps. We show that if such a map  $f$  doesn't have any attracting periodic orbit, then there is only one topological attractor. Precisely, there is a transitive compact set  $K$  such that  $K$  is the  $\omega$ -limit set under  $f$  for a residual set of points of the interval. Then, we classify all the possible topological attractors that can appear and we develop a theory of Spectral decomposition for Lorenz maps.

This work also intends to bring some new ingredients to the understanding of the structure of the Lorenz maps in the perspective of Palis' Conjecture on the finiteness of the number of possible attractors, and although it was already known that under a metrical point of view this number is finite, the techniques developed here point to a wider range of possibilities of dynamical systems, as long as it mixes discontinuity with criticality (zero derivative).