

Hyperbolicity of renormalization for dissipative gap mappings

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Here we study a class of Lorenz mappings, which have “gaps” in their ranges. These mappings arise as return mappings for the Lorenz flow and for certain Cherry flows. They are also among the first examples of mappings with a wandering interval - the gap. This phenomenon is ruled out for $\mathcal{C}^{1+\text{Zygmund}}$ mappings with a non-flat critical point by [1]. In fact, in [2] it is proved that Lorenz mappings satisfying a certain bounded non-linearity condition have a wandering interval if and only if they have a renormalization which is a gap mapping.

Our main result concerns the structure of the topological conjugacy classes of \mathcal{C}^4 dissipative gap mappings, that is, we prove that “The topological conjugacy class of an infinitely renormalizable \mathcal{C}^4 dissipative gap mapping is a \mathcal{C}^1 -manifold of codimension-one in the space of dissipative gap maps”.

Bibliography

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