

Dimensions and critical regularity of hyperbolic graphs

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Resumo/Abstract:

We discuss fractal structures of invariant sets. To develop a general - in particular in a higherdimensional setting - dimension theory is a notoriously difficult problem. One natural approach to study higherdimensional dynamical systems (and perhaps eventually their dimension theory) is to consider gradually more complex (e.g. higher-dimensional) settings. Following this approach, we consider sets which can be considered as graphs over hyperbolic sets in 2 dimensional manifolds. Moreover, we restrict our considerations to sets which are invariant under diffeomorphisms which simultaneously have a partially-hyperbolic and a hyperbolic structure. We describe the (critical: either Lipschitz or at all scales Hölder continuous) regularity of such graphs and draw conclusions about their box-counting dimension. A key ingredient for the dimension arguments will be the presence of a blender-like horseshoe.