

Iterated Fractal Drums

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Some New Perspectives :

Polyhedral Measures, Atomic decompositions

Joint work with Michel L. Lapidus

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We carry on our exploration of the connections between the Complex Fractal Dimensions of an iterated fractal drum (IFD) and the intrinsic properties of the fractal involved – in our present case, the Weierstrass Curve.

In order to gain a better understanding of the differential operators associated to this everywhere singular object, we identify the trace of the classical Sobolev spaces on this curve, by means of trace theorems which extend the results of Alf Jonsson and Hans Wallin obtained in the case of a d -set. For this purpose, we construct a specific polyhedral measure, which is done by means of a polygonal neighborhood of the Curve. We then obtain the order of the fractal Laplacian on the IFD.