OIST Analysis on Metric Spaces Seminar January 22th, 2024

Different definitions of conformal dimension are (essentially) equal!

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I want to tell you about something that came out of OIST. Last May OIST hosted a workshop in analysis, random walks and potential theory on metric spaces, which showcased some exciting developments in these areas. I was fortunate to participate, and the topics of the conference prompted discussions with another participant Mathav Murugan, who told about an open problem regarding the conformal dimension of the Sierpinski carpet. The question asks, if different definitions of this notion are equal. Through discussions at the workshop, I solved this question. I will explain the problem, the notions of conformal dimension, and the crucial tool: a new notion of discrete modulus. There are roughly two approaches classically to define discrete modulus, and this new approach lies roughly in between the two — in such a way, that it can benefit from good estimates in both of the worlds. The talk will be fairly mathematical, but I will try to give definitions of the main concepts and some motivation.