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Computability of harmonic measures

In this talk I will present the new notion of computable harmonic approximation, and show that for an arbitrary domain, computability of the harmonic measure for a single point implies its computability for any point. Nevertheless, different points may require different algorithms, which gives rise to surprisingly natural examples of continuous functions whose values can be computed at any point but cannot be computed using same algorithm on their entire domain. I will present counter examples supporting this and study the conditions under which the harmonic measure is computable uniformly, that is by a single algorithm, and characterize them for regular domains with a computable boundary.

This talk is based on a joint work with I. Binder, C. Rojas, and M. Yampolsky.