Counting Salem Numbers

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We will discuss how Mahler measure and related concepts (e.g., Salem numbers) are connected to problems about lengths of geodesics on arithmetic hyperbolic manifolds. As a result, by solving problems using tools from analytic number theory, we are able to answer quantitative questions in spectral geometry. This talk will build towards two goals: (1) showing that, on average, geodesic lengths of non-compact arithmetic hyperbolic orbifolds appear with high multiplicity; (2) determining the proportion of Salem numbers produced by certain arithmetic hyperbolic lattices. This talk is based on joint work that arose during the Number Theory in the Americas workshops with various subsets of the following co-authors: Mikhail Belolipetsky (IMPA, Brazil), Michelle Chu (U. Minnesota, USA), Matilde Lalín (U. Montréal, Canada), Plinio G.P. Murillo (U. Federal Fluminense, Brazil), and Otto Romero (CIMAC, Mexico).

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