Analysis Seminar

Title: Lipschitz-free spaces over Cantor sets and approximation properties

Speaker: Filip Talimdjioski

Date: Tue 11th April 2023 at 3:00PM

Location: Seminar Room SCN 1.25

Abstract: Let $K = 2^{\mathbb{N}}$ be the Cantor set, let $\mathcal{M}$ be the set of all metrics d on K that give its usual (product) topology, and equip $\mathcal{M}$ with the topology of uniform convergence, where the metrics are regarded as functions on K^2. In this talk we show that the set of metrics $d \in \mathcal{M}$ for which the Lipschitz-free space $\mathcal{F}(K, d)$ has the metric approximation property is a residual $F_{\sigma\delta}$ set in $\mathcal{M}$, and that the set of metrics $d \in \mathcal{M}$ for which $\mathcal{F}(K, d)$ fails the approximation property is a dense meager set in $\mathcal{M}$. Time allowing, we will also use the notion of Hausdorff dimension to show the existence of a family $(d_\alpha) \subseteq \mathcal{M}$ of size continuum, such that $\mathcal{F}(K, d_\alpha)$ and $\mathcal{F}(K, d_\beta)$ are not isomorphic as algebras for $\alpha \neq \beta$.

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