REMOVABILITY FOR LIPSCHITZ HARMONIC FUNCTIONS IN THE HEISENBERG GROUP

KATRIN FÄSSLER

Abstract. Which sets in the Heisenberg group are non-removable for Lipschitz harmonic functions, where 'harmonic' means 'solution to the sub-Laplace equation'? This question is related to a certain singular integral operator induced by a 3-dimensional Calderón-Zygmund kernel. We prove that if such operators are L^2 bounded on vertical planes, with uniform constants, then they are also L^2 bounded on all intrinsic graphs of compactly supported $C^{1,\alpha}$ functions over vertical planes. As an application, we deduce that such graphs are non-removable. This is joint work with V. Chousionis and T. Orponen.

University of Fribourg

FILLING INVARIANTS OF NILPOTENT LIE GROUPS

MORITZ GRUBER

Abstract. Filling invariants are variations of the classical isoperimetric problem. Roughly spoken, they are measures for the difficulty to fill given boundaries by admissible fillings. I will discuss recent results for Lipschitz filling functions in the case of nilpotent Lie groups.

Karlsruher Institut für Technologie (KIT)

RANK-n-HYPERBOLIC SPACES

URS LANG

Abstract. A rough guiding principle in the theory of spaces of nonpositive curvature says that the geometry of k-dimensional objects with k greater than or equal to the rank of the underlying space should still exhibit hyperbolic (rank 1) behavior. We formalize this by describing a large class of "rank-n-hyperbolic" metric spaces for $n > 1$ satisfying some weak assumptions reminiscent of nonpositive curvature. Several characterizations and fundamental properties, akin to those of Gromov hyperbolic spaces, will be discussed in detail.

ETH Zurich

MARSTRAND'S THEOREM AND RESTRICTED PROJECTIONS IN $\mathbb{R}^3$

TUOMAS ORPONEN

ABSTRACT. Marstrand's projection theorem in $\mathbb{R}^3$ states that the dimension of 1-dimensional sets is a.s. preserved, when they are projected to lines through the origin. Here "a.s." refers to the surface measure on the unit sphere. I will discuss recent work with A. Käenmäki and L. Venieri, where we showed that the result remains true, if "a.s." refers, instead, to length measure on certain curves on the unit sphere.

UNIVERSITY OF HELSINKI

QUASICONVEX DOMAINS

TAPIO RAJALA

Abstract. A domain is quasiconvex if any two of its points can be connected by a curve inside the domain that has length comparable to the distance between the points. In this talk, we will study closed sets in the Euclidean space with quasiconvex complements. In particular, we will look at metrically removable sets.

University of Jyväskylä

ON THE THEOREM OF FARY-MILNOR

STEPHAN STADLER

Abstract. We discuss the following CAT(0) version of Fary-Milnor's theorem on knots. If γ is a Jordan curve of total curvature $\leq 4\pi$ in a CAT(0) space, then either γ spans an embedded disc or else the total curvature of γ equals 4π and γ bounds a star shaped subset intrinsically isometric to a Euclidean cone of cone angle equal to 4π.

LMU München