

References

- [1] L. V. Ahlfors, *Bounded analytic functions*, Duke Math. J. 14 (1947), 1–11.
- [2] G. Alberti, *Rank one property for derivatives of functions with bounded variation*, Proc. R. Soc. Edinburgh Sect. A 123 (1993), 239–274.
- [3] G. Alberti, M. Csörnyei and D. Preiss, *Structure of null sets in the plane and applications*, In European Congress of Mathematics, 3–22, Eur. Math. Soc., 2005.
- [4] G. Alberti, M. Csörnyei and D. Preiss, *Differentiability of Lipschitz functions, structure of null sets, and other problems*, In Proceedings of the International Congress of Mathematicians, Volume III, 1379–1394, Hindustan Book Agency, 2010.
- [5] G. Alberti and D. Marchese, *On the differentiability of Lipschitz functions with respect to measures in the Euclidean space*, Geom. Funct. Anal. 26 (2016), 1–66.
- [6] R. J. Aliaga, C. Gartland, C. Petitjean and A. Procházka, *Purely 1-unrectifiable spaces and locally flat Lipschitz functions*, arXiv:2103.09370.
- [7] W. Allard, *On the first variation of a varifold*, Ann. of Math. 95 (1972), 418–446.
- [8] F. J. Almgren Jr., *Plateau's Problem*, W. A. Benjamin, 1966.
- [9] F. J. Almgren Jr., *Existence and Regularity Almost Everywhere of Solutions to Elliptic Variational Problems with Constraints*, Mem. Amer. Math. Soc. 4, American Mathematical Society, 1976.
- [10] F. J. Almgren Jr., *Almgren's Big Regularity Paper*, World Scientific Monograph Series in Mathematics 1, World Scientific Publishing, 2000.
- [11] O. Alper, *Rectifiability of line defects in liquid crystals with variable degree of orientation*, Arch. Ration. Mech. Anal. 228 (2018), 309–339.
- [12] O. Alper, *On the singular set of free interface in an optimal partition problem*, Comm. Pure Appl. Math. 73 (2020), 855–915.
- [13] L. Ambrosio, *Metric space valued functions of bounded variation*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. 17 (1990), 439–478.
- [14] L. Ambrosio, A. Coscia and G. Dal Maso, *Fine properties of functions with bounded deformation*, Arch. Ration. Mech. Anal. 139 (1997), 201–238.
- [15] L. Ambrosio, G. Fusco and D. Pallara, *Functions of Bounded Variation and Free Discontinuity Problems*, Oxford University Press, 2000.
- [16] L. Ambrosio and B. Kirchheim, *Rectifiable sets in metric and Banach spaces*, Math. Ann. 318 (2000), 527–555.

- [17] L. Ambrosio and B. Kirchheim, *Currents in metric spaces*, Acta Math. 185 (2000), 1–80.
- [18] L. Ambrosio, B. Kirchheim and M. Lecumberry, *On the rectifiability of defect measures arising in a micromagnetics model*, Nonlinear problems in mathematical physics and related topics, II, 29–60, Int. Math. Ser. (N.Y.), 2, Kluwer/Plenum, 2002.
- [19] L. Ambrosio, B. Kleiner and E. Le Donne, *Rectifiability of sets of finite perimeter in Carnot groups: existence of a tangent hyperplane*, J. Geom. Anal. 19 (2009), 509–540.
- [20] L. Ambrosio and H. M. Soner, *A measure-theoretic approach to higher codimension mean curvature flows*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. 25 (1997), 27–49.
- [21] G. Antonelli, C. Brena and E. Pasqualetto, *On rectifiable measures in Carnot groups: existence of density*, arXiv:2204.04921.
- [22] G. Antonelli and E. Le Donne, *Pauls rectifiable and purely Pauls unrectifiable smooth hypersurfaces*, Nonlinear Anal. 200 (2020), 111983.
- [23] G. Antonelli and A. Merlo, *On rectifiable measures in Carnot groups: existence of density*, arXiv:2009.13941.
- [24] G. Antonelli and A. Merlo, *On rectifiable measures in Carnot groups: representation*, Calc. Var. Partial Differential Equations 61 (2022), 52 pp.
- [25] G. Antonelli and A. Merlo, *On rectifiable measures in Carnot groups: Marstrand-Mattila rectifiability criterion*, J. Funct. Anal. 283 (2022), Paper No. 109495.
- [26] G. Anzellotti and R. Serapioni, *C^k rectifiable sets*, J. Reine Angew. Math. 453 (1994), 1–20.
- [27] L. Arena and R. Serapioni, *Intrinsic regular submanifolds in Heisenberg groups are differentiable graphs*, Calc. Var. Partial Differential Equations 35 (2009), 517–536.
- [28] D. H. Armitage and S. J. Gardiner, *Classical Potential Theory*, Springer-Verlag, 2001.
- [29] A. Arroyo-Rabasa, G. De Philippis, J. Hirsch and F. Rindler, *Dimensional estimates and rectifiability for measures satisfying linear PDE constraints*, Geom. Funct. Anal. 29 (2019), 639–658.
- [30] J. Azzam, *Poincaré inequalities and uniform rectifiability*, Rev. Mat. Iberoam. 37 (2021), 2161–2190.
- [31] J. Azzam, *Semi-uniform domains and the A_∞ property for harmonic measure*, Int. Math. Res. Not. IMRN (2021), 6717–6771.
- [32] J. Azzam and D. Dabrowski, *An α -number characterization of L^p spaces on uniformly rectifiable sets*, arXiv:2009.10111.
- [33] J. Azzam, G. David and T. Toro, *Wasserstein distance and the rectifiability of doubling measures: Part I*, Math. Ann. 364 (2016), 151–224.
- [34] J. Azzam, G. David and T. Toro, *Wasserstein distance and the rectifiability of doubling measures: part II*, Math. Z. 286 (2017), 861–891.
- [35] J. Azzam, S. Hofmann, J. M. Martell, S. Mayboroda, M. Mourougolou, X. Tolsa and A. Volberg, *Rectifiability of harmonic measure*, Geom. Funct. Anal. 26 (2016), 703–728.

- [36] J. Azzam, S. Hofmann, J. M. Martell, M. Mourougolou and X. Tolsa, *Harmonic measure and quantitative connectivity: geometric characterization of the L^p -solvability of the Dirichlet problem*, Invent. Math. 222 (2020), 881–993.
- [37] J. Azzam and M. Hyde, *The weak lower density condition and uniform rectifiability*, arXiv:2005.02030.
- [38] J. Azzam, M. Mourougolou and X. Tolsa, *A two-phase free boundary problem for harmonic measure and uniform rectifiability*, Comm. Pure. Appl. Math. 70 (2017), 2121–2163.
- [39] J. Azzam, M. Mourougolou, X. Tolsa and A. Volberg, *On a two-phase problem for harmonic measure in general domains*, Amer. J. Math. 141 (2019), 1259–1279.
- [40] J. Azzam and R. Schul, *Hard Sard: quantitative implicit function and extension theorem for Lipschitz maps*, Geom. Funct. Anal. 22 (2012), 1062–1123.
- [41] J. Azzam and R. Schul, *An analyst's traveling salesman theorem for sets of dimension larger than one*, Math. Ann. 370 (2018), 1389–1476.
- [42] J. Azzam and X. Tolsa, *Characterization of n -rectifiability in terms of Jones' square function: Part II*, Geom. Funct. Anal. 25 (2015), 1371–1412.
- [43] J. Azzam, X. Tolsa and T. Toro, *Characterization of rectifiable measures in terms of α -numbers*, Trans. Amer. Math. Soc. 373 (2020), 7991–8037.
- [44] J. Azzam and M. Villa, *Quantitative comparisons of multiscale geometric properties*, Anal. PDE 14 (2021), 1873–1904.
- [45] M. Badger, *Generalized rectifiability of measures and the identification problem*, Complex Anal. Synerg. 5 (2019), Paper No. 2, 17 pp. Correction ibid Paper No. 11.
- [46] M. Badger, S. Li and S. Zimmerman, *Identifying 1-rectifiable measures in Carnot groups*, arXiv:2109.06753.
- [47] M. Badger and L. Naples, *Radon measures and Lipschitz graphs*, Bull. Lond. Math. Soc. 53 (2021), 921–936.
- [48] M. Badger, L. Naples and V. Vellis, *Hölder curves and parameterizations in the analyst's traveling salesman theorem*, Adv. Math. 349 (2019), 564–647.
- [49] M. Badger and R. Schul, *Multiscale analysis of 1-rectifiable measures: necessary conditions*, Math. Ann. 361 (2015), 1055–1074.
- [50] M. Badger and R. Schul, *Two sufficient conditions for rectifiable measures*, Proc. Amer. Math. Soc. 144 (2016), 2445–2454.
- [51] M. Badger and R. Schul, *Multiscale analysis of 1-rectifiable measures II: characterizations*, Anal. Geom. Metr. Spaces 5 (2017), 1–39.
- [52] M. Badger and V. Vellis, *Geometry of measures in real dimensions via Hölder parameterizations*, J. Geom. Anal. 29 (2019), 1153–1192.
- [53] Z. Balogh, *Size of characteristic sets and functions with prescribed gradient*, J. Reine Angew. Math. 564 (2003), 63–83.
- [54] Z. Balogh, K. Fässler, P. Mattila and J. T. Tyson, *Projection and slicing theorems in Heisenberg groups*, Adv. Math. 231 (2012), 569–604.
- [55] Z. Balogh, J. T. Tyson and B. Warhurst, *Sub-Riemannian vs. Euclidean dimension comparison and fractal geometry on Carnot groups*, Adv. Math. 220 (2009), no. 2, 560–619.
- [56] D. Bate, *Structure of measures in Lipschitz differentiability spaces*, J. Amer. Math. Soc. 28 (2015), 421–482.

- [57] D. Bate, *Purely unrectifiable metric spaces and perturbations of Lipschitz functions*, Acta Math. 224 (2020), 1–65.
- [58] D. Bate, *Characterising rectifiable metric spaces using tangent measures*, arXiv:2109.12371.
- [59] D. Bate, *On 1-regular and 1-uniform metric measure spaces*, to appear.
- [60] D. Bate, M. Csörnyei and B. Wilson, *The Besicovitch-Federer projection theorem is false in every infinite dimensional Banach space*, Israel J. Math. 220 (2017), 175–188.
- [61] D. Bate and S. Li, *Characterizations of rectifiable metric measure spaces*, Ann. Sci. Ec. Norm. Super. (4) 50 (2017), 1–37.
- [62] A. S. Besicovitch, *On the fundamental geometrical properties of linearly measurable plane sets of points*, Math. Ann. 98 (1928), 422–464.
- [63] A. S. Besicovitch, *On the fundamental geometrical properties of linearly measurable plane sets of points II*, Math. Ann. 115 (1938), 296–329.
- [64] A. S. Besicovitch, *On the fundamental geometrical properties of linearly measurable plane sets of points III*, Math. Ann. 116 (1939), 349–357.
- [65] L. M. Bigolin and D. Vittone, *Some remarks about parametrizations of intrinsic regular surfaces in the Heisenberg group*, Publ. Mat. 54 (2010), 159–172.
- [66] C. J. Bishop and P. W. Jones, *Harmonic measure and arclength*, Ann. of Math. (2) 132 (1990), 511–547.
- [67] C. J. Bishop and Y. Peres, *Fractals and Probability in Analysis*, Cambridge University Press, 2017.
- [68] L. M. Blumenthal and K. Menger, *Studies in Geometry*, W. H. Freeman, 1970.
- [69] B. Bojarski, P. Hajlasz and P. Strzelecki, *Sard's theorem for mappings in Hölder and Sobolev spaces*, Manuscripta Math. 118 (2005), 383–397.
- [70] E. Bombieri, E. De Giorgi and E. Giusti, *Minimal cones and the Bernstein problem*, Invent. Math. 7 (1969), 243–268.
- [71] A. Bonfiglioli, E. Lanconelli and F. Uguzzoni, *Stratified Lie Groups and Potential Theory for Their Sub-Laplacians*, Springer Monographs in Mathematics, 2007.
- [72] S. V. Borodachov, D. P. Hardin and E. B. Saff, *Asymptotics for discrete weighted minimal Riesz energy problems on rectifiable sets*, Trans. Am. Math. Soc. 360 (2008), 1559–1580.
- [73] S. V. Borodachov, D. P. Hardin and E. B. Saff, *Low complexity methods for discretizing manifolds via Riesz energy minimization*, Found. Comput. Math. 14 (2014), 1173–1208.
- [74] S. V. Borodachov, D. P. Hardin and E. B. Saff, *Discrete Energy on Rectifiable Sets*, Springer Monographs in Mathematics. Springer, 2019.
- [75] S. Bortz, J. Hoffman, S. Hofmann, J. L. Luna Garcia and K. Nyström, *Coronizations and big pieces in metric spaces*, arXiv:2008.11544.
- [76] S. Bortz, J. Hoffman, S. Hofmann, J. L. Luna Garcia and K. Nyström, *The corona decomposition for parabolic uniformly rectifiable sets*, arXiv:2103.12497.
- [77] S. Bortz, J. Hoffman, S. Hofmann, J. L. Luna Garcia and K. Nyström, *Parabolic singular integrals with nonhomogeneous kernels*, arXiv:2103.12830.
- [78] S. Bortz and O. Tapiola, *ε -approximability of harmonic functions in L^p implies uniform rectifiability*, Proc. Amer. Math. Soc. 147 (2019), 2107–2121.

- [79] J. Bourgain, *On the Hausdorff dimension of harmonic measure in higher dimension*, Invent. Math. 87 (1987), 477–483.
- [80] K. A. Brakke, *The motion of a surface by its mean curvature*, Mathematical Notes, 20. Princeton University Press, 1978.
- [81] J. E. Brothers, *The (φ, k) rectifiable subsets of a homogeneous space*, Acta Math. 122 (1969), 197–229.
- [82] E. Brue, A. Naber and D. Semola, *Boundary regularity and stability for spaces with Ricci bounded below*, arXiv:2011.08383.
- [83] E. Brue, E. Pasqualetto and D. Semola, *Rectifiability of the reduced boundary for sets of finite perimeter over $RCD(K, N)$ spaces*, arXiv:1909.00381, to appear in J. Eur. Math. Soc.
- [84] E. Brue, E. Pasqualetto and D. Semola, *Rectifiability of $RCD(K, N)$ spaces via δ -splitting maps*, Ann. Fenn. Math. 46 (2021), 465–482.
- [85] A. Calderón, *Cauchy integrals on Lipschitz curves and related operators*, Proc. Nat. Acad. Sci. U.S.A. 74 (1977), 1324–1327.
- [86] M. Cao, P. Hidalgo-Palencia and J. M. Martell, *Carleson measure estimates, corona decompositions, and perturbation of elliptic operators without connectivity*, arXiv:2202.06363.
- [87] L. Capogna, D. Danielli, S. D. Pauls and J. T. Tyson, *An Introduction to the Heisenberg Group and the Sub-Riemannian Isoperimetric Problem*, Birkhäuser, 2007.
- [88] A. Chang and X. Tolsa, *Analytic capacity and projections*, J. Eur. Math. Soc. 22 (2020), 4121–4159.
- [89] A. Chang, D. Dabrowski, T. Orponen and M. Villa, *Structure of sets with nearly maximal Favard length*, arXiv:2203.01279.
- [90] J. Cheeger, *Differentiability of Lipschitz functions on metric measure spaces*, Geom. Funct. Anal. 9 (1999), 428–517.
- [91] J. Cheeger and T. Colding, *On the structure of spaces with Ricci curvature bounded below, I*, J. Differential Geom. 46 (1997), 406–480.
- [92] J. Cheeger, T. Colding and G. Tian, *On the singularities of spaces with bounded Ricci curvature*, Geom. Funct. Anal. 12 (2002), 873–914.
- [93] J. Cheeger, W. Jiang and A. Naber, *Rectifiability of singular sets of noncollapsed limit spaces with Ricci curvature bounded below*, Ann. of Math. (2) 193 (2021), 407–538.
- [94] J. Cheeger and A. Naber, *Regularity of Einstein manifolds and the codimension 4 conjecture*, Ann. of Math. (2) 182 (2015), 1093–1165.
- [95] M. Chlebik, *Lower s densities and rectifiability in n -space*, preprint.
- [96] V. Chousionis, *Singular integrals on Sierpinski gaskets*, Publ. Mat. 53 (2009), 245–256.
- [97] V. Chousionis, K. Fässler and T. Orponen, *Intrinsic Lipschitz graphs and vertical β -numbers in the Heisenberg group*, Amer. J. Math. 141 (2019), 1087–1147.
- [98] V. Chousionis, K. Fässler and T. Orponen, *Boundedness of singular integrals on $C^{1,\alpha}$ intrinsic graphs in the Heisenberg group*, Adv. Math. 354 (2019), 106745.
- [99] V. Chousionis, J. Garnett, T. Le and X. Tolsa, *Square functions and uniform rectifiability*, Trans. Amer. Math. Soc. 368 (2016), 6063–6102.
- [100] V. Chousionis and S. Li, *Nonnegative kernels and 1-rectifiability in the Heisenberg group*, Anal. PDE 10 (2017), 1407–1428.

- [101] V. Chousionis, S. Li and R. Young, *The strong geometric lemma for intrinsic Lipschitz graphs in Heisenberg groups*, arXiv:2004.11447.
- [102] V. Chousionis, S. Li and S. Zimmerman, *The traveling salesman theorem in Carnot groups*, Calc. Var. Partial Differential Equations 58 (2019), Paper No. 14, 35 pp.
- [103] V. Chousionis, S. Li and S. Zimmerman, *Singular integrals on $C^{1,\alpha}$ regular curves in Carnot groups*, arXiv:1912.13279, to appear in Journal d'Analyse.
- [104] V. Chousionis, V. Magnani and J. T. Tyson, *On uniform measures in the Heisenberg group*, Adv. Math. 363 (2020), 106980.
- [105] V. Chousionis, J. Mateu, L. Prat and X. Tolsa, *Calderón-Zygmund kernels and rectifiability in the plane*, Adv. Math. 231 (2012), 535–568.
- [106] V. Chousionis and P. Mattila, *Singular integrals on Ahlfors-David regular subsets of the Heisenberg group*, J. Geom. Anal. 21 (2011), 56–77.
- [107] V. Chousionis and P. Mattila, *Singular integrals on self-similar sets and removability for Lipschitz harmonic functions in Heisenberg groups*, J. Reine Angew. Math. 691 (2014), 29–60.
- [108] V. Chousionis and J. T. Tyson, *Marstrand's density theorem in the Heisenberg group*, Bull. Lond. Math. Soc. 47 (2015), 771–788.
- [109] V. Chousionis and M. Urbanski, *Homogeneous kernels and self-similar sets*, Indiana Univ. Math. J. 64 (2015), 411–431.
- [110] M. Christ, *Lectures on singular integral operators*, CBMS Regional Conference Series in Mathematics 77. Published for the Conference Board of the Mathematical Sciences, by the American Mathematical Society, 1990.
- [111] M. Christ, *A $T(b)$ theorem with remarks on analytic capacity and the Cauchy integral*, Colloq. Math. 60/61 (1990), 601–628.
- [112] J. P. R. Christensen, *Uniform measures and spherical harmonics*, Math. Scand. 26 (1970), 293–302.
- [113] P. Chunaev, *A new family of singular integral operators whose L^2 -boundedness implies rectifiability*, J. Geom. Anal. 27 (2017), 2725–2757.
- [114] P. Chunaev, J. Mateu and X. Tolsa, *Singular integrals unsuitable for the curvature method whose L^2 -boundedness still implies rectifiability*, J. Anal. Math. 138 (2019), 741–764.
- [115] R. R. Coifman, A. McIntosh and Y. Meyer, *L'intégrale de Cauchy définit un opérateur borné sur L^2 pour les courbes lipschitziennes*, Ann. of Math. (2) 116 (1982), 361–387.
- [116] R. R. Coifman and G. Weiss, *Analyse harmonique non-commutative sur certains espaces homogènes*, Lecture Notes in Math. 242, Springer, 1971.
- [117] T. H. Colding and W. P. Minicozzi II, *Uniqueness of blowups and Łojasiewicz inequalities*, Ann. of Math. (2) 182 (2015), 221–285.
- [118] T. H. Colding and W. P. Minicozzi II, *The singular set of mean curvature flow with generic singularities*, Invent. Math. 204 (2016), 443–471.
- [119] T. H. Colding, W. P. Minicozzi II and E. K. Pedersen, *Mean curvature flow*, Bull. Amer. Math. Soc. (N.S.) 52 (2015), 297–333.
- [120] T. H. Colding and A. Naber, *Characterization of tangent cones of noncollapsed limits with lower Ricci bounds and applications*, Geom. Funct. Anal. 23 (2013), 134–148.

- [121] D. R. Cole and S. Pauls, C^1 hypersurfaces of the Heisenberg group are N -rectifiable, *Houston J. Math.* 32 (2006), 713–724.
- [122] M. Csörnyei and D. Preiss, Sets of finite \mathcal{H}^1 measure that intersect positively many lines in infinitely many points, *Ann. Acad. Sci. Fenn.* 32 (2007), 545–548.
- [123] M. Csörnyei, D. Preiss and J. Tiser, Lipschitz functions with unexpectedly large sets of nondifferentiability points, *Abstr. Appl. Anal.* (2005), 361–373.
- [124] D. Dabrowski, Necessary condition for rectifiability involving Wasserstein distance W_2 , *Int. Math. Res. Not. IMRN* (2020), no. 22, 8936–8972.
- [125] D. Dabrowski, Cones, rectifiability, and singular integral operators, *Rev. Mat. Iberoam.*, published online, 2021, DOI:10.4171/RMI/1301, arXiv:2006.14432.
- [126] D. Dabrowski, Sufficient condition for rectifiability involving Wasserstein distance W_2 , *J. Geom. Anal.* 31 (2021), 8539–8606.
- [127] D. Dabrowski, Two examples related to conical energies, *Ann. Fenn. Math.* 47 (2022), 261–281
- [128] D. Dabrowski and X. Tolsa, The measures with L^2 -bounded Riesz transform satisfying a subcritical Wolff-type energy condition, arXiv:2106.00303.
- [129] D. Dabrowski and M. Villa, Analytic capacity and dimension of sets with plenty of big projections, arXiv:2204.05804.
- [130] B. Dahlberg, Estimates of harmonic measure, *Arch. Rational Mech. Anal.* 65 (1977), 275–288.
- [131] T. Das, D. Simmons and M. Urbanski, Dimension rigidity in conformal structures, *Adv. Math.* 308 (2017), 1127–1186.
- [132] B. Davey and K. Taylor, A Quantification of a Besicovitch Nonlinear Projection Theorem via Multiscale Analysis, *J. Geom. Anal.* 32 (2022), Paper No. 138, 55 pp.
- [133] G. David, Opérateurs intégraux singuliers sur certaines courbes du plan complexe, *Ann. Sci. École Norm. Sup.* (4) 17 (1984), 157–189.
- [134] G. David, Morceaux de graphes lipschitziens et intégrales singulières sur une surface, *Rev. Mat. Iberoam.* 4(1) (1988), 73–114.
- [135] G. David, *Wavelets and Singular Integrals on Curves and Surfaces*, Lecture Notes in Mathematics 1465. Springer-Verlag, 1991.
- [136] G. David, Unrectifiable 1-sets have vanishing analytic capacity, *Rev. Mat. Iberoam.* 14 (1998), 369–479.
- [137] G. David, Des intégrales singulières bornées sur un ensemble de Cantor, *C. R. Acad. Sci. Paris Sér. I Math.* 332 (2001), 391–396.
- [138] G. David, *Singular Sets of Minimizers for the Mumford-Shah Functional*, Progress in Mathematics 233. Birkhäuser Verlag, 2005.
- [139] G. David, Local Regularity Properties of Almost- and Quasiminimal Sets with a Sliding Boundary Condition, *Astérisque* No. 411 (2019).
- [140] G. David, M. Engelstein and S. Mayboroda, Square functions, non-tangential limits and harmonic measure in co-dimensions larger than one, *Duke Math. J.* 170 (2021), 455–501.
- [141] G. David, M. Engelstein and T. Toro, Free boundary regularity for almost-minimizers, *Adv. Math.* 350 (2019), 1109–1192.
- [142] G. David, J. Feneuil and S. Mayboroda, *Elliptic Theory for Sets with Higher Co-dimensional Boundaries*, Mem. Amer. Math. Soc. 274, American Mathematical Society, 2021.

- [143] G. David and P. Mattila, *Removable sets for Lipschitz harmonic functions in the plane*, Rev. Mat. Iberoam. 10 (2000), 137–215.
- [144] G. David and S. Mayboroda, *Harmonic measure is absolutely continuous with respect to the Hausdorff measure on all low-dimensional uniformly rectifiable sets*, arXiv:2006.14661.
- [145] G. David and S. Mayboroda, *Approximation of Green functions and domains with uniformly rectifiable boundaries of all dimensions*, arXiv:2010.09793.
- [146] G. David and S. Semmes, *Singular integrals and rectifiable sets in \mathbb{R}^n : Au-delà des graphes lipschitziens*, Astérisque (1991).
- [147] G. David and S. Semmes, *Analysis of and on Uniformly Rectifiable Sets*, Mathematical Surveys and Monographs 38, American Mathematical Society, 1993.
- [148] G. David and S. Semmes, *Uniform rectifiability and singular sets*, Ann. Inst. H. Poincaré Anal. Non Linéaire 13 (1996), 383–443.
- [149] G. David and S. Semmes, *Quasiminimal surfaces of codimension 1 and John domains*, Pacific J. Math. 183 (1998), 213–277.
- [150] G. David and S. Semmes, *Uniform Rectifiability and Quasiminimizing Sets of Arbitrary Codimension*, Mem. Amer. Math. Soc. 687, American Mathematical Society, 2000.
- [151] G. David and T. Toro, *Reifenberg Parameterizations for Sets with Holes*, Mem. Amer. Math. Soc. 215, no. 1012, American Mathematical Society, 2012.
- [152] G. C. David, *Tangents and rectifiability of Ahlfors regular Lipschitz differentiability spaces*, Geom. Funct. Anal. 25 (2015), 553–579.
- [153] G. C. David and B. Kleiner, *Rectifiability of planes and Alberti representations*, Ann. Sc. Norm. Super. Pisa Cl. Sci. (5) 19 (2019), 723–756.
- [154] G. C. David and E. Le Donne, *A note on topological dimension, Hausdorff measure, and rectifiability*, Proc. Amer. Math. Soc. (2020), 4299–4304.
- [155] G. C. David and R. Schul, *A sharp necessary condition for rectifiable curves in metric spaces*, Rev. Mat. Iberoam. 37 (2021), 1007–1044.
- [156] E. De Giorgi, *Nuovi teoremi relativi alle misure $(r - 1)$ -dimensionale in uno spazio ad r -dimensioni*, Ricerche Mat. 4 (1955), 95–113.
- [157] E. De Giorgi, *Selected Papers*, edited by L. Ambrosio, G. Dal Maso, M. Forti, M. Miranda and S. Spagnolo, Springer-Verlag, 2005.
- [158] M. De Guzmán, *Real Variable Methods in Harmonic Analysis*, North-Holland, 1981.
- [159] C. De Lellis, *Rectifiable Sets, Densities and Tangent Measures*, Zurich Lectures in Advanced Mathematics. European Mathematical Society (EMS), 2008.
- [160] C. De Lellis, *The size of the singular set of area-minimizing currents*, Surveys in differential geometry 2016. Advances in geometry and mathematical physics, 1–83, Surv. Differ. Geom. 21, Int. Press, 2016.
- [161] C. De Lellis, *The regularity theory for the area functional (in geometric measure theory)*, arXiv:2110.11324.
- [162] C. De Lellis, F. Ghiraldin and F. Maggi, *A direct approach to Plateau’s problem*, J. Eur. Math. Soc. 19 (2017), 2219–2240.
- [163] C. De Lellis, J. Hirsch, A. Marchese, L. Spolaor and S. Stuvard, *Fine structure of the singular set of area minimizing hypersurfaces modulo p* , arXiv:2201.10204.

- [164] C. De Lellis, A. Marchese, E. Spadaro and D. Valtorta, *Rectifiability and upper Minkowski bounds for singularities of harmonic Q -valued maps*, *Comment. Math. Helv.* 93 (2018), 737–779.
- [165] C. De Lellis and S. Otto, *Structure of entropy solutions to the eikonal equation*, *J. Eur. Math. Soc.* 5 (2003), 107–145.
- [166] C. De Lellis, S. Otto and M. Westdickenberg, *Structure of entropy solutions to the eikonal equation*, *Arch. Ration. Mech. Anal.* 170 (2003), 137–184.
- [167] C. De Lellis and T. Riviere, *The rectifiability of entropy measures in one space dimension*, *J. Math. Pures Appl.* 82 (2003), 1343–1367.
- [168] S. Delladio, *Density rate of a set, application to rectifiability results for measurable jets*, *Manuscripta Math.* 142 (2013), 475–489.
- [169] S. Delladio, *The set of regular values (in the sense of Clarke) of a Lipschitz map, A sufficient condition for rectifiability of class C^3* , *Ann. Polon. Math.* 117 (2016), 215–230.
- [170] G. Del Nin and K. O. Idu, *Geometric criteria for $C^{1,\alpha}$ -rectifiability*, arXiv:1909.10625.
- [171] G. Del Nin and A. Merlo, *Endpoint Fourier restriction and unrectifiability*, *Proc. Amer. Math. Soc.* 150 (2022), 2137–2144.
- [172] T. De Pauw, *An example pertaining to the failure of the Besicovitch-Federer structure theorem in Hilbert space*, *Publ. Mat.* 61 (2017), 153–173.
- [173] G. De Philippis, A. De Rosa and F. Ghiraldin, *Rectifiability of varifolds with locally bounded first variation with respect to anisotropic surface energies*, *Comm. Pure Appl. Math.* 71 (2018), 1123–1148.
- [174] G. De Philippis, M. Engelstein, L. Spolaor and B. Velichkov, *Rectifiability and almost everywhere uniqueness of the blow-up for the vectorial Bernoulli free boundaries*, arXiv:2107.12485.
- [175] G. De Philippis and F. Rindler, *On the structure of A -free measures and applications*, *Ann. of Math. (2)* 184 (2016), 1017–1039.
- [176] G. De Philippis and F. Rindler, *On the Structure of Measures Constrained by Linear PDEs*, *Proceedings of the International Congress of Mathematicians—Rio de Janeiro 2018. Vol. III. Invited lectures*, 2215–2239, World Sci. Publ., 2018.
- [177] D. Di Donato, K. Fässler and T. Orponen, *Metric rectifiability of H -regular surfaces with Hölder continuous horizontal normal*, to appear in *IMRN*, arXiv:1906.10215.
- [178] M. Dindos, L. Dyer and S. Hwang, *Metric rectifiability of H -regular surfaces with Hölder continuous horizontal normal*, arXiv:1805.07270.
- [179] S. Don, Le Donne, T. Moisala and D. Vittone, *A rectifiability result for finite-perimeter sets in Carnot groups*, arXiv:1912.00493.
- [180] S. Don, A. Massaccesi and D. Vittone, *Rank-one theorem and subgraphs of BV functions in Carnot groups*, *J. Funct. Anal.* 276 (2019), 687–715.
- [181] J. R. Dorronsoro, *A characterization of potential spaces*, *Proc. Amer. Math. Soc.* 95 (1985), 21–31.
- [182] J. Dudziak, *Vitushkin's Conjecture for Removable Sets*, Springer-Verlag, 2010.
- [183] N. Edelen and M. Engelstein, *Quantitative stratification for some free-boundary problems*, *Trans. Amer. Math. Soc.* 371 (2019), 2043–2072.

- [184] N. Edelen, A. Naber and D. Valtorta, *Quantitative Reifenberg theorem for measures*, arXiv:1612.08052.
- [185] N. Edelen, A. Naber and D. Valtorta, *Effective Reifenberg theorems in Hilbert and Banach spaces*, Math. Ann. 374 (2019), 1139–1218.
- [186] V. Eiderman, F. Nazarov and A. Volberg, *The s -Riesz transform of an s -dimensional measure in \mathbb{R}^2 is unbounded for $1 < s < 2$* , J. Anal. Math. 122 (2014), 1–23.
- [187] S. Eilenberg and O. G. Harrold, Jr., *Continua of finite linear measure I*, Am. J. Math. 65 (1943), 137–146.
- [188] S. Eriksson-Bique, *A new Hausdorff content bound for limsup sets*, arXiv:2201.13412.
- [189] L. C. Evans and R. F. Gariepy, *Measure Theory and Fine Properties of Functions*, CRC Press, 1992.
- [190] K. J. Falconer, *Geometry of Fractal Sets*, Cambridge University Press, 1985.
- [191] H. M. Farag, *The Riesz kernels do not give rise to higher-dimensional analogues of the Menger-Melnikov curvature*, Publ. Mat. 43 (1999), 251–260.
- [192] H. M. Farag, *Unrectifiable 1-sets with moderate essential flatness satisfy Besicovitch's 1/2-conjecture*, Adv. Math. 149 (2000), 89–129.
- [193] H. M. Farag, *Curvatures of the Melnikov type, Hausdorff dimension, rectifiability, and singular integrals on \mathbb{R}^n* , Pacific J. Math. 196 (2000), 317–339.
- [194] H. M. Farag, *On the $\frac{1}{2}$ -problem of Besicovitch: quasi-arcs do not contain sharp saw-teeth*, Rev. Mat. Iberoam. 18 (2002), 17–40.
- [195] K. Fässler and T. Orponen, *Riesz transform and vertical oscillation in the Heisenberg group*, to appear in Anal. PDE, arXiv:1810.13122.
- [196] K. Fässler and T. Orponen, *Dorronsoro's theorem in Heisenberg groups*, Bull. Lond. Math. Soc. 52 (2020), 472–488.
- [197] K. Fässler and T. Orponen, *Singular integrals on regular curves in the Heisenberg group*, J. Math. Pures Appl. 153 (2021), 30–113.
- [198] K. Fässler, T. Orponen and S. Rigot, *Semmes surfaces and intrinsic Lipschitz graphs in the Heisenberg group*, Trans. Amer. Math. Soc. 373 (2020), 5957–5996.
- [199] H. Federer, *The (ϕ, k) rectifiable subsets of n space*, Trans. Amer. Math. Soc. 62 (1947), 114–192.
- [200] H. Federer, *Dimension and measure*, Trans. Amer. Math. Soc. 62 (1947), 536–547.
- [201] H. Federer, *A note on the Gauss-Green theorem*, Proc. Amer. Math. Soc. 9 (1958), 447–451.
- [202] H. Federer, *Curvature measures*, Trans. Amer. Math. Soc. 93 (1959), 418–491.
- [203] H. Federer, *Geometric Measure Theory*, Springer-Verlag, 1969.
- [204] H. Federer, *The singular sets of area minimizing rectifiable currents with codimension one and of area minimizing flat chains modulo two with arbitrary codimension*, Bull. Amer. Math. Soc. 76 (1970), 767–771.
- [205] H. Federer and W. H. Fleming, *Normal and integral currents*, Ann. of Math. (2) 72 (1960), 458–520.
- [206] J. Feneuil, *Absolute continuity of the harmonic measure on low dimensional rectifiable sets*, arXiv:2006.03118.

- [207] I. Fonseca and S. Müller, *\mathcal{A} -quasiconvexity, lower semicontinuity, and Young measures*, SIAM J. Math. Anal. 30 (1999), 1355–1390.
- [208] K. Fouladgar and L. Simon, *The symmetric minimal surface equation*, Indiana Univ. Math. J. 69 (2020), 331–366.
- [209] B. Fragala and R. Mantegazza, *On some notions of tangent space to a measure*, Proc. Roy. Soc. Edinburgh Sect. A 129 (1999), 331–342.
- [210] B. Franchi, M. Marchi and R. Serapioni, *Differentiability and approximate differentiability for intrinsic Lipschitz functions in Carnot groups and a Rademacher theorem*, Anal. Geom. Metr. Spaces 2 (2014), 258–281.
- [211] B. Franchi and R. Serapioni, *Intrinsic Lipschitz graphs within Carnot groups*, J. Geom. Anal. 26 (2016), 1944–1994.
- [212] B. Franchi, R. Serapioni and F. Serra Cassano, *Rectifiability and perimeter in the Heisenberg group*, Math. Ann. 321 (2001), 479–531.
- [213] B. Franchi, R. Serapioni and F. Serra Cassano, *On the structure of finite perimeter sets in step 2 Carnot groups*, J. Geom. Anal. 13 (2003), 421–466.
- [214] B. Franchi, R. Serapioni and F. Serra Cassano, *Intrinsic Lipschitz graphs in Heisenberg groups*, J. Nonlinear Convex Anal. 7 (2006), 423–441.
- [215] B. Franchi, R. Serapioni and F. Serra Cassano, *Regular submanifolds, graphs and area formula in Heisenberg groups*, Adv. Math. 211 (2007), 152–203.
- [216] B. Franchi, R. Serapioni and F. Serra Cassano, *Differentiability of intrinsic Lipschitz functions within Heisenberg groups*, J. Geom. Anal. 21 (2011), 1044–1084.
- [217] G. Fuhrmann and J. Wang, *Rectifiability of a class of invariant measures with one non-vanishing Lyapunov exponent*, Discrete Contin. Dyn. Syst. 37 (2017), no. 11, 5747–5761.
- [218] J. Galeski, *Besicovitch-Federer projection theorem for continuously differentiable mappings having constant rank of the Jacobian matrix*, Math. Z. 289 (2018), 995–1010.
- [219] J. Garnett, *Analytic capacity and measure*, Lecture Notes in Math. 297, Springer-Verlag, 1972.
- [220] J. Garnett, R. Killip and R. Schul, *A doubling measure on \mathbb{R}^d can charge a rectifiable curve*, Proc. Amer. Math. Soc. 138 (2010), 1673–1679.
- [221] J. B. Garnett and D. E. Marshall, *Harmonic Measure*, Cambridge University Press, 2005.
- [222] J. Garnett, M. Mourougolou and X. Tolsa, *Uniform rectifiability from Carleson measure estimates and ε -approximability of bounded harmonic functions*, Duke Math. J. 167 (2018), 1473–1524.
- [223] S. Ghinassi, *Sufficient conditions for $C^{1,\alpha}$ parametrization and rectifiability*, Ann. Acad. Sci. Fenn. Math. 45 (2020), 1065–1094.
- [224] S. Ghinassi and M. Goering, *Menger curvatures and $C^{1,\alpha}$ rectifiability of measures*, Arch. Math. (Basel) 114 (2020), 419–429.
- [225] D. Girela-Sarrión, *Geometric conditions for the L^2 -boundedness of singular integral operators with odd kernels with respect to measures with polynomial growth in \mathbb{R}^d* , J. Anal. Math. 137 (2019), 339–372.
- [226] D. Girela-Sarrión and X. Tolsa, *The Riesz transform and quantitative rectifiability for general Radon measures*, Calc. Var. Partial Differential Equations 57 (2018), Paper No. 16, 63 pp.

- [227] E. Giusti, *Minimal Surfaces and Functions of Bounded Variation*, Birkhäuser, 1984.
- [228] M. Gromov, *Structures métriques pour les variétés riemanniennes*, Edited by J. Lafontaine and P. Pansu. Textes Mathématiques 1. CEDIC, Paris, 1981.
- [229] I. Hahlomaa, *Menger curvature and Lipschitz parametrizations in metric spaces*, Fund. Math. 185 (2005), 143–169.
- [230] I. Hahlomaa, *Menger curvature and rectifiability in metric spaces*, Adv. Math. 219 (2008), 1894–1915.
- [231] P. Hajlasz, *On an old theorem of Erdős about ambiguous locus*, arXiv:2011.14508.
- [232] D. P. Hardin, E. B. Saff and O. V. Vlasniuk, *Asymptotics of k -nearest neighbor Riesz energies*, arXiv:2201.00474.
- [233] S. Hensel and T. Laux, *A new varifold solution concept for mean curvature flow: Convergence of the Allen-Cahn equation and weak-strong uniqueness*, arXiv:2109.04233.
- [234] J. Hirsch, S. Stuvard and D. Valtorta, *Rectifiability of the singular set of multiple valued energy minimizing harmonic maps*, Trans. Amer. Math. Soc. 371 (2019), 4303–4352.
- [235] S. Hofmann, P. Le, J. M. Martell and K. Nyström, *The weak- A_∞ property of harmonic and p -harmonic measures implies uniform rectifiability*, Anal. PDE 10 (2017), 513–558.
- [236] S. Hofmann, J. Lewis and K. Nyström, *Existence of big pieces of graphs for parabolic problems*, Ann. Acad. Sci. Fenn. Math. 28 (2003), 355–384.
- [237] S. Hofmann, J. Lewis and K. Nyström, *Caloric measure in parabolic flat domains*, Duke Math. J. 122 (2004), 281–345.
- [238] S. Hofmann, J. M. Martell and S. Mayboroda, *Uniform rectifiability, Carleson measure estimates, and approximation of harmonic functions*, Duke Math. J. 165 (2016), 2331–2389.
- [239] S. Hofmann, J. M. Martell, S. Mayboroda, T. Toro and Z. Zhao, *Uniform rectifiability and elliptic operators satisfying a Carleson measure condition*, Geom. Funct. Anal. 31 (2021), 325–401.
- [240] S. Hofmann and O. Tapiola, *Uniform rectifiability and ε -approximability of harmonic functions in L^p* , Ann. Inst. Fourier (Grenoble) 70 (2020), 1595–1638.
- [241] R. Hovila, *Transversality of isotropic projections, unrectifiability, and Heisenberg groups*, Rev. Mat. Iberoam. 102 (2014), 463–476.
- [242] R. Hovila, E. Järvenpää, M. Järvenpää and F. Ledrappier, *Transversality of isotropic projections, unrectifiability, and Heisenberg groups*, Rev. Mat. Iberoam. 102 (2014), 436–476.
- [243] G. Huisken, *Asymptotic behavior for singularities of the mean curvature flow*, J. Differential Geom. 31 (1990), 285–299.
- [244] P. Huovinen, *Singular integrals and rectifiability of measures in the plane*, Ann. Acad. Sci. Fenn. Math. Diss. No. 109 (1997), 63 pp.
- [245] P. Huovinen, *A nicely behaved singular integral on a purely unrectifiable set*, Proc. Amer. Math. Soc. 129 (2001), 3345–3351.
- [246] M. Hyde, *A d -dimensional Analyst’s Travelling Salesman Theorem for subsets of Hilbert space*, arXiv:2106.12661.

- [247] M. Hyde, *The restricted content and the d -dimensional Analyst's Travelling Salesman Theorem for general sets*, Adv. Math. 397 (2022), Paper No. 108189.
- [248] K. O. Idu, V. Magnani and F. P. Maiale, *Characterizations of k -rectifiability in homogenous groups*, J. Math. Anal. Appl. 500 (2021), Paper No. 125120.
- [249] K. O. Idu and F. P. Maiale, *$C^{1,\alpha}$ -rectifiability in low codimension in Heisenberg groups*, arXiv:2102.05165.
- [250] T. Ilmanen, *Convergence of the Allen-Cahn equation to Brakke's motion by mean curvature*, J. Differential Geom. 38 (1993), 417–461.
- [251] T. Ilmanen, *Elliptic Regularization and Partial Regularity for Motion by Mean Curvature*, Mem. Amer. Math. Soc. 108, American Mathematical Society, 1994.
- [252] N. M. Isakov, *On a global property of approximately differentiable functions*, Mat. Zametki 41 (1987), 500–508, 620.
- [253] B. Jaye and T. Merchán, *On the problem of existence in principal value of a Calderón-Zygmund operator on a space of non-homogeneous type*, Proc. Lond. Math. Soc. (3) 121 (2020), 152–176.
- [254] B. Jaye and T. Merchán, *Small local action of singular integrals on spaces of non-homogeneous type*, Rev. Mat. Iberoam. 36 (2020), 2183–2207.
- [255] B. Jaye and T. Merchán, *The Huovinen transform and rectifiability of measures*, Adv. Math. 400 (2022), Paper No. 108297.
- [256] B. Jaye and F. Nazarov, *Reflectionless measures and the Mattila-Melnikov-Verdera uniform rectifiability theorem*, In Geometric Aspects of Functional Analysis, 199–229, Lecture Notes in Math. 2116, Springer, 2014.
- [257] B. Jaye and F. Nazarov, *Three revolutions in the kernel are worse than one*, Int. Math. Res. Not. IMRN 2018, 7305–7317.
- [258] B. Jaye and F. Nazarov, *Reflectionless measures for Calderón-Zygmund operators II: Wolff potentials and rectifiability*, J. Eur. Math. Soc. 21 (2019), 549–583.
- [259] B. Jaye, F. Nazarov and X. Tolsa, *The measures with an associated square function operator bounded in L^2* , Adv. Math. 339 (2018), 60–112.
- [260] B. Jaye, X. Tolsa and M. Villa, *A proof of Carleson's ε^2 -conjecture*, Ann. of Math. (2) 194 (2021), 97–161.
- [261] R. L. Jerrard, *A new proof of the rectifiable slices theorem*, Ann. Sc. Norm. Super. Pisa Cl. Sci. (5) 1 (2002), 905–924.
- [262] W. Jiang and A. Naber, *L^2 curvature bounds on manifolds with bounded Ricci curvature*, Ann. of Math. (2) 193 (2021), 107–222.
- [263] P. W. Jones, *Rectifiable sets and traveling salesman problem*, Invent. Math. 102 (1990), 1–15.
- [264] P. W. Jones, N. H. Katz and A. Vargas, *Checkerboards, Lipschitz functions and uniform rectifiability*, Rev. Mat. Iberoam. 13 (1997), 189–210.
- [265] P. W. Jones and T. Murai, *Positive analytic capacity but zero Buffon needle probability*, Pacific J. Math. 133 (1988), 99–114.
- [266] H. Joyce and P. Mörters, *A set with finite curvature and projections of zero length*, J. Math. Anal. Appl. 247 (2000), 126–135.
- [267] A. Julia and A. Merlo, *On sets with unit Hausdorff density in homogeneous groups*, arXiv:2203.16471.
- [268] A. Julia, S. Nicolussi Golo and D. Vittone, *Area of intrinsic graphs and coarea formula in Carnot groups*, arXiv:2004.02520.

- [269] A. Julia, S. Nicolussi Golo and D. Vittone, *Nowhere differentiable intrinsic Lipschitz graphs*, Bull. Lond. Math. Soc. 53 (2021), 1766–1775.
- [270] A. Julia, S. Nicolussi Golo and D. Vittone, *Lipschitz functions on submanifolds in Heisenberg groups*, arXiv:2107.00515.
- [271] A. Käenmäki, *Dynamics of the scenery flow and conical density theorems*, In Dynamical Systems, 99–143, Banach Center Publ. 115, Polish Acad. Sci. Inst. Math., 2018.
- [272] A. Käenmäki, T. Sahlsten and P. Shmerkin, *Dynamics of the scenery flow and geometry of measures*, Proc. Lond. Math. Soc. (3) 110 (2015), 1248–1280.
- [273] S. Keith, *A differentiable structure for metric measure spaces*, Adv. Math. 183 (2004), 271–315.
- [274] T. Keleti, *A peculiar set in the plane constructed by Vitushkin, Ivanov and Melnikov*, Real. Anal. Exch. 20 (1995), 291–312.
- [275] C. Kenig, D. Preiss and T. Toro, *Boundary structure and size in terms of interior and exterior harmonic measures in higher dimensions*, J. Amer. Math. Soc. 22 (2009), 771–796.
- [276] B. Kirchheim, *Rectifiable metric spaces: Local structure and regularity of Hausdorff measure*, Proc. Amer. Math. Soc. 121 (1994), 113–123.
- [277] B. Kirchheim and D. Preiss, *Uniformly distributed measures in Euclidean spaces*, Math. Scand. 90 (2002), 152–160.
- [278] B. Kirchheim and F. Serra Cassano, *Rectifiability and parameterization of intrinsic regular surfaces in the Heisenberg group*, Ann. Sc. Norm. Super. Pisa Cl. Sci. 3 (2004), 871–896.
- [279] R. V. Kohn, *An example concerning approximate differentiation*, Indiana Univ. Math. J. 26 (1977), 393–397.
- [280] O. Kolasinski, *Higher order rectifiability of measures via averaged discrete curvatures*, Rev. Mat. Iberoam. 33 (2017), 861–884.
- [281] O. Kowalski and D. Preiss, *Besicovitch type properties of measures and submanifolds*, J. Reine Angew. Math. 379 (1987), 115–151.
- [282] S. G. Krantz and H. R. Parks, *Geometric Integration Theory*, Birkhäuser, 2008.
- [283] G. Kun, O. Maleva and A. Máthé, *Metric characterization of pure unrectifiability*, Real Anal. Exchange 31 (2005/2006), 195–213.
- [284] P. Lahti, *Federer’s characterization of sets of finite perimeter in metric spaces*, Anal. PDE 13, (2020), 1501–1519.
- [285] U. Lang, *Local currents in metric spaces*, J. Geom. Anal. 21 (2011), 683–742.
- [286] E. Le Donne and R. Young, *Carnot rectifiability of sub-Riemannian manifolds with constant tangent*, arXiv:1901.1122.
- [287] M.-C. Lee, A. Naber and R. Neumayer, *d_p convergence and ε -regularity theorems for entropy and scalar curvature lower bounds*, arXiv:2010.15663.
- [288] J. C. Léger, *Rectifiability and Menger curvature*, Ann. of Math. 149 (1999), 831–869.
- [289] G. Lerman, *Quantifying curvelike structures of measures by using L_2 Jones quantities*, Comm. Pure Appl. Math. 56 (2003), 1294–1365.
- [290] G. Lerman and J. T. Whitehouse, *High-dimensional Menger-type curvatures. Part I: Geometric multipoles and multiscale inequalities*, Rev. Mat. Iberoam. 27 (2011), 493–555.

- [291] S. Li, *Stratified β -numbers and traveling salesman in Carnot groups*, arXiv:1902.03268.
- [292] S. Li and A. Naber, *Quantitative estimates on the singular sets of Alexandrov spaces*, Peking Math. J. 3 (2020), 203–234.
- [293] S. Li and R. Schul, *The traveling salesman problem in the Heisenberg group: upper bounding curvature*, Trans. Amer. Math. Soc. 368 (2016), 4585–4620.
- [294] S. Li and R. Schul, *An upper bound for the length of a traveling salesman path in the Heisenberg group*, Rev. Mat. Iberoam. 32 (2016), 391–417.
- [295] F. Lin, *Mapping problems, fundamental groups and defect measures*, Acta Math. Sin. (Engl. Ser.) 15 (1999), 25–52.
- [296] F. Lin, *Gradient estimates and blow-up analysis for stationary harmonic maps*, Ann. of Math. (2) 149 (1999), 785–829.
- [297] F. Lin and X. Yang, *Geometric Measure Theory; an Introduction*, International Press, 2002.
- [298] A. Lorent, *Rectifiability of measures with locally uniform cube density*, Proc. London. Math. Soc. (3) 86 (2003), 153–249.
- [299] F. Maggi, *Sets of Finite Perimeter and Variational Problems*, Cambridge University Press, 2012.
- [300] V. Magnani, *Unrectifiability and rigidity in stratified groups*, Arch. Math. (Basel) 83 (2004), 568–576.
- [301] V. Magnani, *Characteristic points, rectifiability and perimeter measure on stratified groups*, J. Eur. Math. Soc. 8 (2006), 585–609.
- [302] V. Magnani, *Some remarks on densities in the Heisenberg group*, Ann. Acad. Sci. Fenn. Math. 42 (2017), 357–365.
- [303] O. Maleva and D. Preiss, *Cone unrectifiable sets and non-differentiability of Lipschitz functions*, Israel J. Math. 232 (2019), 75–108.
- [304] V. Mantegazza, *Lecture Notes on Mean Curvature Flow*, Progress in Mathematics 290. Birkhäuser/Springer Basel AG, 2011.
- [305] A. Marchese and A. Merlo, *Characterization of rectifiability via Lusin type approximation*, arXiv:2112.15376.
- [306] E. Marconi, *The rectifiability of the entropy defect measure for Burgers equation*, arXiv:2004.09932.
- [307] E. Marconi, *Rectifiability of entropy defect measures in a micromagnetics model*, arXiv:2011.13065.
- [308] J. M. Marstrand, *Hausdorff two-dimensional measure in 3 space*, Proc. London. Math. Soc. (3) 11 (1961), 91–108.
- [309] J. M. Marstrand, *The (ϕ, s) regular sets in n space*, Trans. Amer. Math. Soc. 113 (1964), 369–392.
- [310] H. Martikainen and T. Orponen, *Boundedness of the density normalised Jones' square function does not imply 1-rectifiability*, J. Math. Pures Appl. 110 (2018), 71–92.
- [311] H. Martikainen and T. Orponen, *Characterising the big pieces of Lipschitz graphs property using projections*, J. Eur. Math. Soc. 20 (2018), 1055–1073.
- [312] M. A. Martin and P. Mattila, *k -dimensional regularity classifications for s -fractals*, Trans. Amer. Math. Soc. 305 (1988), 2641–2648.
- [313] M. A. Martin and P. Mattila, *On the parametrization of self-similar and other fractal sets*, Proc. Amer. Math. Soc. 128 (2000), 293–315.

- [314] A. Mas and X. Tolsa, *Variation for the Riesz transform and uniform rectifiability*, J. Eur. Math. Soc. 16 (2014), 2267–2321.
- [315] H. Massaccesi and D. Vittone, *An elementary proof of the rank-one theorem for BV functions*, J. Eur. Math. Soc. 21 (2019), 3255–3258.
- [316] J. Mateu and L. Prat, *L^2 -bounded singular integrals on a purely unrectifiable set in \mathbb{R}^d* , Ann. Fenn. Math 46 (2021), 187–200.
- [317] J. Mateu, L. Prat and X. Tolsa, *Removable singularities for Lipschitz caloric functions in time varying domains*, arXiv:2005.03397.
- [318] P. Mattila, *Hausdorff m regular and rectifiable sets in n -space*, Trans. Amer. Math. Soc. 205 (1975), 263–274.
- [319] P. Mattila, *An example illustrating integralgeometric measures*, Amer. J. Math. 108 (1986), 693–702.
- [320] P. Mattila, *Smooth maps, null-sets for integralgeometric measure and analytic capacity*, Ann. of Math. (2) 123 (1986), 303–309.
- [321] P. Mattila, *Geometry of Sets and Measures in Euclidean Spaces*, Cambridge University Press, 1995.
- [322] P. Mattila, *Cauchy singular integrals and rectifiability of measures in the plane*, Adv. Math. 115 (1995), 1–34.
- [323] P. Mattila, *Singular integrals and rectifiability*, In Proceedings of the 6th International Conference on Harmonic Analysis and Partial Differential Equations (El Escorial, 2000). Publ. Mat. 2002, Vol. Extra, 199–208.
- [324] P. Mattila, *Measures with unique tangent measures in metric groups*, Math. Scand. 97 (2005), 298–398.
- [325] P. Mattila, *Parabolic rectifiability, tangent planes and tangent measures*, to appear Ann. Fenn. Math. 47 (2022), 855–884.
- [326] P. Mattila and M. S. Melnikov, *Existence and weak-type inequalities for Cauchy integrals of general measures on rectifiable curves and sets*, Proc. Amer. Math. Soc. 120 (1994), 143–149.
- [327] P. Mattila, M. S. Melnikov and V. Verdera, *The Cauchy integral, analytic capacity, and uniform rectifiability*, Ann. of Math. (2) 144 (1996), 127–136.
- [328] P. Mattila and P. V. Paramonov, *On geometric properties of harmonic $Lip1$ -capacity*, Pacific J. Math. 171 (1995), 469–490.
- [329] P. Mattila and D. Preiss, *Rectifiable measures in \mathbb{R}^n and existence of principal values for singular integrals*, J. London Math. Soc. 52 (1995), 482–496.
- [330] P. Mattila, R. Serapioni and F. Serra Cassano, *Characterization of intrinsic rectifiability in Heisenberg groups*, Ann. Sc. Norm. Super. Pisa Cl. Sci. (5) 9 (2010), 687–723.
- [331] P. Mattila and J. Verdera, *Convergence of singular integrals with general measures*, J. Eur. Math. Soc. 11 (2009), 257–271.
- [332] S. Mayboroda and A. Volberg, *Boundedness of the square function and rectifiability*, C. R. Math. Acad. Sci. Paris 347 (2009), 1051–1056.
- [333] S. Mayer and M. Urbanski, *Finer geometric rigidity of limit sets of conformal IFS*, Proc. Amer. Math. Soc. 131 (2003), 3695–3702.
- [334] M. S. Melnikov, *Analytic capacity: a discrete approach and the curvature of measure*, (Russian) Mat. Sb. 186 (1995), 57–76; translation in Sb. Math. 186 (1995), no. 6, 827–846.

- [335] M. S. Melnikov and V. Verdera, *A geometric proof of the L^2 boundedness of the Cauchy integral on Lipschitz graphs*, Internat. Math. Res. Notices 1996, 325–331.
- [336] K. Menger, *Untersuchungen über allgemeine Metrik. Vierte Untersuchung. Zur Metrik der Kurven*, Math. Ann. 103 (1930), 466–501.
- [337] U. Menne, *Second order rectifiability of integral varifolds of locally bounded first variation*, J. Geom. Anal. 23 (2013), 709–763.
- [338] U. Menne, *Pointwise differentiability of higher order for sets*, Ann. Global Anal. Geom. 55 (2019), 591–621.
- [339] U. Menne, *Pointwise differentiability of higher order for distributions*, Anal. PDE 14 (2021), 323–354.
- [340] U. Menne and M. Santilli, *A geometric second-order-rectifiable stratification for closed subsets of Euclidean space*, Ann. Sc. Norm. Super. Pisa Cl. Sci. 19 (2019), 1185–1198.
- [341] J. Merhej, *On the geometry of rectifiable sets with Carleson and Poincaré-type conditions*, Indiana Univ. Math. J. 66 (2017), 1659–1706.
- [342] A. Merlo, *Marstrand-Mattila rectifiability criterion for 1-codimensional measures in Carnot Groups*, arXiv:2007.03236.
- [343] A. Merlo, *Geometry of 1-codimensional measures in Heisenberg groups*, Invent. Math. 227 (2022), 27–148.
- [344] M. Meurer, *Integral Menger curvature and rectifiability of n -dimensional Borel sets in Euclidean N -space*, Trans. Amer. Math. Soc. 370 (2018), 1185–1250.
- [345] E. J. Mickle and Radó, *Density theorems for outer measures in n -space*, Proc. Amer. Math. Soc. 9 (1958), 433–439.
- [346] W. P. Minicozzi, *Commentary on ‘Nonunique tangent maps at isolated singularities of harmonic maps’ by Brian White*, Bull. Amer. Math. Soc. (N.S.) 55 (2018), 359–362.
- [347] D. Mitrea, M. Mitrea and J. Verdera, *Characterizing regularity of domains via the Riesz transforms on their boundaries*, Anal. PDE 9 (2016), 955–1018.
- [348] A. Molero, M. Mouroglou, C. Puliatti and X. Tolsa, *L^2 -boundedness of gradients of single layer potentials for elliptic operators with coefficients of Dini mean oscillation-type*, arXiv:2112.07332.
- [349] A. Mondino and A. Naber, *Structure Theory of Metric-Measure Spaces with Lower Ricci Curvature Bounds*, J. Eur. Math. Soc. 21 (2019), 1809–1854.
- [350] E. F. Moore, *Density ratios and $(\phi, 1)$ rectifiability in n -space*, Trans. Amer. Math. Soc. 69 (1950), 324–334.
- [351] F. Morgan, *Geometric Measure Theory; a Beginner’s Guide*, Academic Press, 1988.
- [352] A. P. Morse and J. F. Randolph, *The $(\Phi, 1)$ rectifiable subsets of the plane*, Trans. Amer. Math. Soc. 55 (1944), 236–305.
- [353] R. Moser, *Stationary measures and rectifiability*, Calc. Var. Partial Differential Equations 17 (2003), 357–368.
- [354] A. Naber, *Lecture notes on rectifiable Reifenberg for measures*, In Harmonic Analysis and Applications, 289–346, IAS/Park City Math. Ser. 27, American Mathematical Society, 2020.

- [355] A. Naber, *Conjectures and Open Questions on the Structure and Regularity of Spaces with Lower Ricci Curvature Bounds*, SIGMA Symmetry Integrability Geom. Methods Appl. 16 (2020), Paper No. 104.
- [356] A. Naber and R. Valtorta, *Rectifiable-Reifenberg and the regularity of stationary and minimizing harmonic maps*, Ann. of Math. 185 (2017), 131–227.
- [357] A. Naber and R. Valtorta, *Stratification for the singular set of approximate harmonic maps*, Math. Z. 290 (2018), 1415–1455.
- [358] A. Naber and R. Valtorta, *Energy identity for stationary Yang Mills*, Invent. Math. 216 (2019), 847–925.
- [359] A. Naber and R. Valtorta, *The singular structure and regularity of stationary varifolds*, J. Eur. Math. Soc. 22 (2020), 3305–3382.
- [360] A. Naor and R. Young, *Vertical perimeter versus horizontal perimeter*, Ann. of Math. 188 (2018), 171–279.
- [361] A. Naor and R. Young, *Foliated corona decompositions*, arXiv:2004.12522.
- [362] L. Naples, *Rectifiability of pointwise doubling measures in Hilbert space*, arXiv:2002.07570.
- [363] F. Nazarov, X. Tolsa and A. Volberg, *On the uniform rectifiability of AD-regular measures with bounded Riesz transform operator: the case of codimension 1*, Acta Math. 213 (2014), 237–321.
- [364] F. Nazarov, X. Tolsa and A. Volberg, *The Riesz transform, rectifiability, and removability for Lipschitz harmonic functions*, Publ. Mat. 58 (2014), 517–532.
- [365] F. Nazarov, S. Treil and A. Volberg, *Accretive system Tb-theorems on nonhomogeneous spaces*, Duke Math. J. 113 (2002), 259–312.
- [366] F. Nazarov and A. Volberg, *On analytic capacity of portions of continuum and a theorem of Guy David*, preprint, 1999, Erwin Schrodinger International Institute for Mathematical Physics, ESI 71, <http://esi.ac.at/preprints/ESI-Preprints.html>.
- [367] A. D. Nimer, *A sharp bound on the Hausdorff dimension of the singular set of a uniform measure*, Calc. Var. Partial Differential Equations 56 (2017), no. 4, Paper No. 111, 31 pp.
- [368] A. D. Nimer, *Conical 3-uniform measure: a family of new examples and characterizations*, to appear in J. Differential Geom., arXiv:1809.08941.
- [369] A. D. Nimer, *Uniformly distributed measures have big pieces of Lipschitz graphs locally*, Ann. Acad. Sci. Fenn. Math. 44 (2019), 389–405.
- [370] K. Okikiolu, *Characterization of subsets of rectifiable curves in \mathbb{R}^n* , J. London Math. Soc. (2) 46 (1992), 336–348.
- [371] T. C. O’Neil, *A local version of the projection theorem*, Proc. London Math. Soc. (3) 73 (1996), 68–104.
- [372] T. Orponen, *The local symmetry condition in the Heisenberg group*, arXiv:1807.05010.
- [373] T. Orponen, *Rickman rugs and intrinsic bilipschitz graphs*, arXiv:2011.08168.
- [374] T. Orponen, *Plenty of big projections imply big pieces of Lipschitz graphs*, Invent. Math. (2021), 1–57.
- [375] P. Painlevé, *Sur les lignes singulières des fonctions analytiques*, Ann. Fac. Sci. Toulouse Sci. Math. Sci. Phys. 2 (1888).
- [376] H. Pajot, *Théorème de recouvrement par des ensembles Ahlfors-réguliers et capacité analytique*, C. R. Acad. Sci. Paris Sér. I Math. 323 (1996), 133–135.

- [377] H. Pajot, *Conditions quantitatives de rectifiabilité*, Bull. Soc. Math. France 125 (1997), 15–53.
- [378] H. Pajot, *Analytic capacity, rectifiability, Menger curvature and the Cauchy integral*, Lecture Notes in Mathematics 1799. Springer-Verlag, 2002.
- [379] P. Pansu, *Métriques de Carnot-Carathéodory et quasiisométries des espaces symétriques de rang un*, Ann. of Math. (2) 129 (1989), 1–60.
- [380] S. Pauls, *A notion of rectifiability modeled on Carnot groups*, Indiana Univ. Math. J. 53 (2004), 49–81.
- [381] L. Prat, C. Puliatti and X. Tolsa, *L^2 -boundedness of gradients of single layer potentials and uniform rectifiability*, Anal. PDE 14 (2021), 717–791.
- [382] D. Preiss, *Geometry of Measures in \mathbb{R}^n : distribution, rectifiability and densities*, Ann. of Math. 125 (1987), 537–643.
- [383] D. Preiss, *Differentiability of Lipschitz functions on Banach spaces*, J. Funct. Anal. 91 (1990), 312–345.
- [384] D. Preiss and J. Tiser, *On Besicovitch's 1/2-problem*, J. London Math. Soc. (2) 25 (1992), 194–207.
- [385] H. Pugh, *A localized Besicovitch-Federer projection theorem*, arXiv:1607.01758.
- [386] Y. Qi and G.-F. Zheng, *Convergence of solutions of the weighted Allen-Cahn equations to Brakke type flow*, Calc. Var. Partial Differential Equations 57 (2018), Paper No. 133, 41 pp.
- [387] J. Rataj and M. Zähle, *General normal cycles and Lipschitz manifolds of bounded curvature*, Ann. Global Anal. Geom. 27 (2005), 135–156.
- [388] J. Rataj and M. Zähle, *Curvature Measures of Singular Sets*, Springer Monographs in Mathematics, Springer, 2019.
- [389] E. R. Reifenberg, *Solution of the Plateau Problem for m -dimensional surfaces of varying topological type*, Acta Math. 104 (1960), 1–92.
- [390] S. Rigot, *Ensembles quasi-minimaux avec contrainte de volume et rectifiabilité uniforme*, Mem. Soc. Math. Fr. (N.S.) No. 82 (2000).
- [391] M. Santilli, *Rectifiability and approximate differentiability of higher order for sets*, Indiana Univ. Math. J. 68 (2019), 1013–1046.
- [392] M. Santilli, *Second order rectifiability of varifolds of bounded mean curvature*, Calc. Var. Partial Differential Equations 60 (2021), no. 2, Paper No. 81, 17 pp.
- [393] R. Schoen and K. Uhlenbeck, *A regularity theory for harmonic maps*, J. Differential Geom. 17 (1982), 307–335.
- [394] R. Schul, *Subsets of rectifiable curves in Hilbert space – the analyst's TSP*, J. Anal. Math. 103 (2007), 331–375.
- [395] R. Serapioni, *Rectifiable sets in Carnot groups*, In Geometric Methods in PDE's, 249–267, Lect. Notes Semin. Interdiscip. Mat. 7, Semin. Interdiscip. Mat. (S.I.M.), Potenza, 2008.
- [396] F. Serra Cassano, *Some topics of geometric measure theory in Carnot groups*, In Geometry, Analysis and Dynamics on Sub-Riemannian Manifolds. Vol. 1, 1–121, EMS Ser. Lect. Math., Eur. Math. Soc., 2016.
- [397] L. Simon, *Lectures on Geometric Measure Theory*, Proceedings of the Centre for Mathematical Analysis, Australian National University, Volume 3, 1983.
- [398] L. Simon, *Rectifiability of the singular set of energy minimizing maps*, Calc. Var. Partial Differential Equations 3 (1995), 1–65.

- [399] L. Simon, *Rectifiability of the singular sets of multiplicity 1 minimal surfaces and energy minimizing maps*, Surveys in Differential Geometry 2 (Cambridge, MA, 1993), 246–305, Int. Press, 1995.
- [400] L. Simon, *Theorems on Regularity and Singularity of Energy Minimizing Maps*. Based on lecture notes by Norbert Hungerbühler, Lectures in Mathematics ETH Zürich, Birkhäuser Verlag, 1996.
- [401] L. Simon, *Stable minimal hypersurfaces in \mathbb{R}^{N+1+l} with singular set an arbitrary closed K in $\{0\} \times \mathbb{R}^l$* , arXiv:2101.06401.
- [402] L. Simon, *A Liouville-type theorem for stable minimal hypersurfaces*, arXiv:2101.06404.
- [403] J. Simons, *Minimal varieties in Riemannian manifolds*, Ann. of Math. (2) 68 (1968), 62–105.
- [404] B. Solomon, *A new proof of the closure theorem for integral currents*, Indiana Univ. Math. J. 33 (1984), 393–418.
- [405] B. Stuvard and Y. Tonegawa, *An existence theorem for Brakke flow with fixed boundary conditions*, Calc. Var. 60 (2021), paper no. 43.
- [406] T. Tao, *A quantitative version of the Besicovitch projection theorem via multi-scale analysis*, Proc. London Math. Soc. (3) 98 (2009), 559–584.
- [407] G. Tian, *Gauge theory and calibrated geometry I*, Ann. Math. 151 (2000), 193–268.
- [408] X. Tolsa, *Principal values for the Cauchy integral and rectifiability*, Proc. London Math. Soc. (3) 82 (2001), 195–228.
- [409] X. Tolsa, *Painlevé’s problem and the semiadditivity of analytic capacity*, Acta Math. 90 (2003), 105–149.
- [410] X. Tolsa, *Finite curvature of arc length measure implies rectifiability: a new proof*, Indiana Univ. Math. J. 54 (2005), 1075–1105.
- [411] X. Tolsa, *Growth estimates for Cauchy integrals of measures and rectifiability*, Geom. Funct. Anal. 17 (2007), 605–643.
- [412] X. Tolsa, *Principal values for Riesz transforms and rectifiability*, J. Funct. Anal. 254 (2008), 1811–1863.
- [413] X. Tolsa, *Uniform rectifiability, Calderón-Zygmund operators with odd kernel, and quasiorthogonality*, Proc. London Math. Soc. (3) 98 (2009), 393–426.
- [414] X. Tolsa, *Mass transport and uniform rectifiability*, Geom. Funct. Anal. 22 (2012), 478–527.
- [415] X. Tolsa, *Analytic Capacity, the Cauchy Transform, and Non-homogeneous Calderón-Zygmund Theory*, Birkhäuser, 2014.
- [416] X. Tolsa, *Uniform Measures and Uniform Rectifiability*, J. London Math. Soc. (2) 92 (2015), 1–18.
- [417] X. Tolsa, *Characterization of n -rectifiability in terms of Jones’ square function: part I*, Calc. Var. Partial Differential Equations 54 (2015), no. 4, 3643–3665. Correction in Calc. Var. Partial Differential Equations 58 (2019), Paper No. 35.
- [418] X. Tolsa, *Rectifiable Measures, Square Functions Involving Densities, and the Cauchy Transform*, Mem. Amer. Math. Soc. 245, American Mathematical Society, 2017.
- [419] X. Tolsa, *Rectifiability of measures and the β_p coefficients*, Publ. Mat. 63 (2019), 491–519.

- [420] X. Tolsa, *The measures with L^2 -bounded Riesz transform and the Painlevé problem for Lipschitz harmonic functions*, arXiv:2106.00680.
- [421] X. Tolsa and T. Toro, *Rectifiability via a square function and Preiss' theorem*, Int. Math. Res. Not. IMRN 2015, 4638–4662.
- [422] Y. Tonegawa, *Brakke's Mean Curvature Flow: An Introduction*, Springer-Briefs in Mathematics, Springer, 2019.
- [423] T. Toro, *Geometric conditions and existence of bi-Lipschitz parameterizations*, Duke Math. J. 77 (1995), 193–227.
- [424] T. Toro, *Geometric measure theory – recent applications*, Notices Amer. Math. Soc. 66 (2019), 474–481.
- [425] J. Verdera, *A weak type inequality for Cauchy transforms of measures*, Publ. Mat. 36 (1992), 1029–1034.
- [426] J. Verdera, *Birth and life of the L^2 boundedness of the Cauchy Integral on Lipschitz graphs*, arXiv:2109.06690.
- [427] M. Villa, *Higher dimensional Jordan curves*, arXiv:1908.10289.
- [428] M. Villa, *A square function involving the center of mass and rectifiability*, arXiv:1910.13747.
- [429] M. Villa, *Ω -symmetric measures and related singular integrals*, Rev. Mat. Iberoam. 37 (2021), 1669–1715.
- [430] D. Vittone, *Lipschitz graphs and currents in Heisenberg groups*, Forum Math. Sigma 10 (2022), Paper No. e6.
- [431] A. G. Vitushkin, *Analytic capacity of sets in problems of approximation theory*, Uspehi Mat. Nauk. 22 (1967), 141–199.
- [432] A. G. Vitushkin, L. D. Ivanov and M. S. Melnikov, *Incommensurability with the minimal linear measure on the length of a set*, Sov. Mat. Dokl. 4 (1963), 1160–1164.
- [433] A. Volberg, *Calderón-Zygmund capacities and operators on non-homogeneous spaces*, Regional Conference Series in Mathematics 100, American Mathematical Society, 2003.
- [434] A. I. Volpert, *The spaces BV and quasi-linear equations*, Math. USSR Sb. 2 (1967), 225–267.
- [435] B. White, *Tangent cones to two-dimensional area-minimizing integral currents are unique*, Duke Math. J. 50 (1983), 143–160.
- [436] B. White, *A new proof of the compactness theorem for integral currents*, Comment. Math. Helv. 64 (1989), 207–220.
- [437] B. White, *Nonunique tangent maps at isolated singularities of harmonic maps*, Bull. Amer. Math. Soc. (N.S.) 26 (1992), 125–129.
- [438] B. White, *A new proof of Federer's structure theorem for k -dimensional subsets of \mathbb{R}^N* , J. Amer. Math. Soc. 11 (1998), 693–701.
- [439] B. White, *Rectifiability of flat chains*, Ann. of Math. (2) 150 (1999), 165–184.
- [440] B. White, *The size of the singular set in mean curvature flow of mean-convex sets*, J. Amer. Math. Soc. 13 (2000), 665–695.
- [441] B. White, *Mean curvature flow with boundary*, arXiv:1901.03008.
- [442] T. Wolff, *Plane harmonic measures live on sets of σ -finite length*, Ark. Mat. 31 (1993), 137–172.

- [443] T. Wolff, *Counterexamples with harmonic gradients*, In Essays on Fourier Analysis in Honor of Elias M. Stein (Princeton, NJ, 1991), 321–384, Princeton Math. Ser. 42, Princeton University Press, 1995.
- [444] J.-M. Wu, *On singularity of harmonic measure in space*, Pacific J. Math. 121 (1986), 485–496.
- [445] M. Zähle, *Integral and current representation of Federer's curvature measures*, Arch. Math. (Basel) 46 (1986), 557–567.
- [446] L. Zajicek, *On the differentiation of convex functions in finite and infinite dimensional spaces*, Czechoslovak Math. J. 29 (1979), 340–348.
- [447] W. P. Ziemer, *Some remarks on harmonic measure in space*, Pacific J. Math. 55 (1974), 629–637.
- [448] W. P. Ziemer, *Weakly Differentiable Functions*, Springer-Verlag, 1989.