Damian Dąbrowski

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Employment

University of Jyväskylä
Postdoctoral researcher   2021–2023

Education

Universitat Autònoma de Barcelona
PhD in Mathematics   2017 – 2021
Thesis: Rectifiability of Radon measures

University of Warsaw
MSc in Mathematics   2015 – 2017
Thesis: Characterization of Sobolev-Slobodeckij spaces using geometric curvature energies

University of Warsaw
BSc in Mathematics (summa cum laude)   2012 – 2015
Thesis: Hausdorff dimension of Besicovitch sets

Papers

○ *Analytic capacity and dimension of sets with plenty of big projections* (with M. Villa). Upcoming.

○ *Integrability of orthogonal projections, and applications to Furstenberg sets* (with T. Orponen and M. Villa). Preprint (2021). arXiv:2107.04471

○ *The measures with L^2-bounded Riesz transform satisfying a subcritical Wolff-type energy condition* (with X. Tolsa). Preprint (2021). arXiv:2106.00303

○ *Two examples related to conical energies.* Ann. Fenn. Math. 47 (2022), no. 1, 261–281.

○ *An α-number characterization of L^p spaces on uniformly rectifiable sets* (with J. Azzam). Preprint (2020). arXiv:2009.10111

○ *Cones, rectifiability, and singular integral operators.* Published online in Rev. Mat. Iberoam. (2021).

○ *Necessary condition for the L^2 boundedness of the Riesz transform on Heisenberg groups* (with M. Villa). Preprint (2020). arXiv:2004.01117

○ *Necessary condition for rectifiability involving Wasserstein distance W_2.* Int. Math. Res. Not. IMRN 2020 (2020), no. 22, 8936–8972.

○ *Sufficient condition for rectifiability involving Wasserstein distance W_2.* J. Geom. Anal. 31 (2021), 8539–8606.

○ *Characterization of Sobolev-Slobodeckij spaces using curvature energies.* Publ. Mat. 63 (2019), 663-677.

Talks

**Invited talk at the HIM Workshop on Harmonic analysis,
Singular Integrals and PDEs**   **Bonn, Germany**
Vitushkin's conjecture and sets with plenty of big projections   Feb. 2022

**Invited talk at the Geometric Analysis session
of "Finnish Mathematical Days 2022"**   **Tampere, Finland**
Vitushkin's conjecture and sets with plenty of big projections   *Jan. 2022*

Contributed talk at a conference "AGENT Forum"   **Helsinki, Finland**
On measures with L^2 bounded Riesz transform: to AD regularity and beyond!   *Oct. 2021*

Contributed talk at a conference "Rajchman, Zygmund, Marcinkiewicz"   **Warsaw, Poland**
On measures with L^2 bounded Riesz transform: to AD regularity and beyond!   *Oct. 2021*

Jyväskylä Geometric Analysis Seminar   **Jyväskylä, Finland**
On measures with L^2 bounded Riesz transform: to AD regularity and beyond!   *May 2021*

Seminari Informal de Matemàtiques de Barcelona   **Barcelona, Spain**
On measures, projections, and measures of projections   *Mar. 2021*

Virtual Maxwell Analysis Seminar   **Edinburgh, UK**
Cones, rectifiability, and singular integral operators   *Apr. 2020*

Seminari d'Anàlisi de Barcelona   **Barcelona, Spain**
Cones, rectifiability, and singular integral operators   *Feb. 2020*

**Invited talk at the Real Analysis session of V Congreso de Jóvenes
Investigadores de la RSME**   **Castelló, Spain**
On the importance of rectifiable sets   *Jan. 2020*

Contributed talk at a workshop in geometry and analysis   **Warsaw, Poland**
Cones and rectifiability   *Oct. 2019*

Contributed talk at BAC conference   **Barcelona, Spain**
Rectifiability of measures via optimal transport   *Jun. 2019*

Contributed talk at HAPDE conference   **Helsinki, Finland**
Rectifiability of measures via optimal transport   *Jun. 2019*

Contributed talk at a calculus of variations winter school   **Toulouse, France**
Rectifiability of measures via optimal transport   *Feb. 2019*

Seminari d'Anàlisi de Barcelona   **Barcelona, Spain**
Rectifiability of measures via optimal transport   *Jan. 2019*

Very Informal Seminar, Universitat Autònoma de Barcelona   **Barcelona, Spain**
Rectifiable Dr Jekyll and purely unrectifiable Mr Hyde   *May 2018*

Contributed talk at a GMT workshop   **Toulouse, France**
Integral Menger curvature   *Sep. 2016*

Scientific interests

○ geometric measure theory
○ harmonic analysis
○ partial differential equations

Short research stays and visits

HIM (Bonn)
Trimester Programme on Interactions between GMT, Singular integrals, and PDE   *Feb. – Mar. 2022*

University of Edinburgh
Research stay   *Feb. – May 2020*

IMPAN (Warsaw)
Simons semester on geometry and analysis   *Oct. 2019*
University of Bonn
Erasmus exchange semester   *Oct. 2015 – Feb. 2016*

Scholarships

2017 – 2020: Barcelona Graduate School of Mathematics PhD scholarship

2016 – 2017: Warsaw Center of Mathematics and Computer Science scholarship

2015 – 2017: Scholarship from the "Curvature energies for non-smooth subsets of Euclidean spaces" grant

2013 – 2017: University of Warsaw Chancellor's scholarship, awarded to top 5-10% of all students

2012 – 2015: Scholarship from the "Kierunki zamawiane" government programme

Teaching and other activities

University of Jyväskylä
Teaching assistant
- Real Analysis – MSc in Mathematics   *Autumn 2021/2022*

Universitat Autònoma de Barcelona
Teaching assistant
- Mathematics – BSc in Microbiology   *Spring 2018/2019*
- Calculus – BSc in Telecommunications Engineering   *Autumn 2018/2019*

Universitat Autònoma de Barcelona
Co-organizer of the Very Informal Seminar   *2018 – 2019*

University of Warsaw
Grader
- Mathematical Analysis I – BSc in Mathematics   *Autumn 2016/2017*

Languages

Polish: native language

English: fluent   *CAE - A, IELTS - 8.0*

Spanish: good working knowledge

German: basic

Finnish: basic