

Contact information

Name : Alexander Reznikov

Address: C542 Department of Mathematics (Wells Hall), Michigan State University, East Lansing, Michigan, 48824, USA

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Scientific degrees

Diploma of Mathematician with honor (Masters Degree); obtained from St.-Petersburg State University, Russia in 2009 (adviser: V. P. Havin)

Topic of Master Thesis: On sharp constants in the Paneyah–Logvinenko–Sereda theorem.

PhD in Mathematics; obtained from Michigan State University, USA in 2014 (adviser: A. Volberg)

Topic of PhD Thesis: Sharp weighted estimates for Calderón-Zygmund operators in one weight and two weight setting.

Personal data

Born on January 30, 1988

Employment

2008-2009 - **Teaching Assistant in St.-Petersburg State University, Russia**

2009-present - **Graduate student and TA in Michigan State University, MI, USA (advisor: A. Volberg)**

Principal fields of interests

Sharp constants in inequalities concerning Uncertainty Principle in Harmonic analysis; attainability of infima in Sobolev embedding theorems.

Application of Bellman function method for problems in Harmonic Analysis; finding an explicit Bellman function; Monge-Ampere equation;

Norm estimates for Calderón-Zygmund operators in one measure and two measures setting; two weight norm estimates of Calderón-Zygmund operators; non-homogeneous harmonic analysis and harmonic analysis on metric spaces.

Service and Review

- Reviewer for St. Petersburg Mathematical Journal;
- Reviewer for Proceedings El Escorial 2012;
- Reviewer for Publicacions Matemàtiques.

Papers

Published and accepted papers

1. Nazarov, A. I.; Reznikov, A. B. **On the existence of an extremal function in critical Sobolev trace embedding theorem** *J. Funct. Anal.* 258 (2010), no. 11, 3906–3921.
2. Nazarov A., Reznikov A., **Attainability of infima in the critical Sobolev trace embedding theorem on manifolds** — American Mathematical Society Translations–Series 2 *Advances in the Mathematical Sciences* 2010; 252 pp; hardcover Volume: 229
3. Reznikov, Alexander **Sharp constants in the Paneyah-Logvinenko-Sereda theorem** *C. R. Math. Acad. Sci. Paris* 348 (2010), no. 3-4, 141–144
4. Reznikov, Alexander **Sharp weak type estimates for weights in the class A_{p_1, p_2}** , *Rev. Mat. Iberoam.* **29** (2013), no. 2, 433–478; doi 10.4171/rmi/726; arXiv:1105.4848v1.
5. Nazarov, F., Reznikov, A., Treil, S., Volberg, A. **A Bellman function proof of the L^2 bump conjecture**, arXiv:1202.2406; accepted to the *Journal d'Analyse Mathématique*.
6. Beznosova O., Reznikov A. **Equivalent definitions of dyadic Muckenhoupt and Reverse Hölder classes in terms of Carleson sequences, weak classes, and comparability of dyadic $L \log L$ and A_∞ constants**, arXiv:1201.0520; accepted to *Revista Matemática Iberoamericana*.
7. Nazarov F., Reznikov A., Volberg A. **The proof of A_2 conjecture in a geometrically doubling metric space**, arXiv:1106.1342; accepted to the *Indiana University Math Journal*.
8. Beznosova O., Reznikov A. **Sharp estimates involving A_∞ and $L \log L$ constants, and their applications to PDE**, arXiv:1107.1885; accepted to the *St. Petersburg Math Journal*.

Submitted papers

9. Cruz-Uribe D., Reznikov A., Volberg A. **Logarithmic bump conditions and the two weight boundedness of Caldern-Zygmund operators**, arXiv:1112.0676; submitted to the *Advances in Mathematics*;
10. Reznikov, A., Volberg, A. **Cauchy independent measures and super-additivity of analytic capacity**, arXiv:1211.2675; submitted to the *Math Research Letters*.

Preprints

11. Reznikov A., Vasyunin V., Volberg A. **An observation: cut-off of the weight w does not increase the A_{p_1, p_2} -“norm” of w** arXiv:1008.3635.
12. Nazarov F., Reznikov A., Vasyunin V., Volberg V. **A_1 conjecture and Bellman functions**, 2010. Available at http://sashavolberg.files.wordpress.com/2010/11/a11_7loghilb11_21_2010.pdf
13. Reznikov A., Treil S., Volberg A. **A sharp estimate of weighted dyadic shifts of complexity 0 and 1**, arXiv:1104.5347
14. Reznikov A., Volberg A. **Random “dyadic” lattice in geometrically doubling metric space and A_2 conjecture**, arXiv:1103.5246;
15. Nazarov, F., Reznikov, A., Treil, S., Volberg, A. **Carleson–Buckley measures beyond the scope of A_∞ and their applications**, arXiv:1202.2931.
16. Nazarov F., Reznikov A., Volberg A. **Bellman approach to the one-sided bumping for weighted estimates of Caldern–Zygmund operators**, arXiv:1306.2653.

Talks

1. Mathematics seminar in the University of Seville, 2010
Topic: Bellman Function and distribution function for A_{p_1, p_2} -weights. Methods of finding the Bellman Function using Monge-Ampère equation.
2. 19th Summer St. Petersburg Meeting in Mathematical Analysis, 2010
Topic: Bellman Function and distribution function for A_{p_1, p_2} -weights.
3. SUMMER/FALL SCHOOL Weighted estimates for singular integrals , 2010
Topic:The Bellman function, the two-weight Hilbert Transform, and embedding of the model spaces K_θ . (After paper by F. Nazarov and A. Volberg)
4. Analysis and PDE seminar in Michigan State University, 2010
Topic: Properties of A_{p_1, p_2} -weights: sharp estimates via Bellman Function.
5. Sectional AMS meeting, Southern Georgia, 2010
Topic: Solution of the A_1 conjecture and estimates of the related Bellman Function.
6. Analysis and PDE seminar in Michigan State University, 2011
Topic: A_1 conjecture: solution and relation to the A_p conjecture.
7. Workshop in Harmonic Analysis, Metric Spaces and Applications to PDE, Seville, Spain, 2011
Topic: A_2 conjecture in a geometrically doubling metric spaces: taking care of the main difficulty.
8. IWOTA 2011, Seville, Spain, 2011
Topic: Solution of the A_1 conjecture.
9. Colloquium at Baylor University, Waco, Texas, 2011
Topic: A_2 conjecture in a geometrically doubling metric space: an overview of weighted estimates on Euclidian spaces, and main difficulties in the metric setting.
10. St.-Petersburg Seminar “Operator Theory and Theory of Functions”, Russia, 2012
Topic: Calderon-Zygmund operators in non-homogeneous setting, and the A_2 -conjecture.
11. Harmonic analysis meeting in Toulouse, France, 2012
Topic: Separated bump conjecture and boundedness of Calderon-Zygmund operators.
12. 21st Summer St. Petersburg Meeting in Mathematical Analysis, Russia, 2012
Topic: Bump conditions, two weight Muckenhoupt conjecture and its weak version.
13. Analysis and PDE seminar in Michigan State University, 2012
Topic: Bump Conjecture and how to stop the time properly.
14. Measure theory seminar in Kent State University, 2012
Topic: Bump conjecture for Calderon-Zygmund operators, part 1.
15. Measure theory seminar in Kent State University, 2012
Topic: Bump conjecture for Calderon-Zygmund operators, part 2.
16. Analysis seminar in Georgia Tech, 2013
Topic: One sided bump conditions and two weight boundedness of Calderon-Zygmund operators.
17. The Third Ohio River Analysis Meeting, 2013
Topic: One sided bump conditions and weak and strong two weight boundedness of Calderón-Zygmund operators.
18. Analysis Seminar in St. Petersburg Department of V.A.Steklov Institute of Mathematics, 2013
Topic: Two weight estimates for Calderón-Zygmund operators, and the one-sided bump conjecture.

Awards

Academic awards

1. First “Young mathematician prize”, awarded by St.Petersburg Department of V.A.Steklov Institute of Mathematics of the Russian Academy of Sciences.
2. Herbert T. Graham Scholarship Award, Michigan State University.

Teaching awards

3. Graduate Teaching Assistant Award, Michigan State University.