

# Xudong Lai

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## Education

Ph.D. Mathematics, Beijing Normal University, 2017, Advisor: Yong Ding.

Joint training Ph.D program, University of Wisconsin-Madison, 2015.09-2016.09. Mentor: Andreas, Seeger.

*Dissertation:* Some problems of the boundedness for singular integral operators and their applications.

M.A. Mathematics, Beijing Normal University, 2014. Advisor: Yong Ding.

*Dissertation:* Some weak type problems for singular integral operators.

B.S. Math and Applied Mathematics, South China University of Technology, 2011.

*Dissertation:* Orthogonal series. Advisor: Xiongying Zhang.

## Fields of Research Interest

Harmonic Analysis and its Applications

## Research

### *Peer-Reviewed Journal Articles*

1.  $L^1$ -Dini condition and limiting behavior of weak type estimate for singular integrals. Rev. Mat. Iberoam. to appear. With Yong Ding.
2. Weighted bound for commutators. J. Geom. Anal. 25 (2015), no. 3, 1915-1938. With Yong Ding.
3. Unique solvability of the Neumann problem with weighted boundary data on a bounded  $C^1$  domain. J. Math. Anal. App, 444(2016),340-369. With Yong Ding.
4. Behavior of bounds of singular integrals for large dimension. Forum Math. 28(2016), no. 6, 1015-1030. With Yong Ding.
5. Weak type  $(1,1)$  behavior for the maximal operator with  $L^1$ -Dini kernel, Potential Analysis. 47(2017), no. 2, 169-187. With Yong Ding
6. Weighted weak type  $(1,1)$  estimate for the Christ-Journé type commutator. Science China Mathematics. 2017. DOI: 10.1007/s11425-016-9025-x. With Yong Ding
7. On a singular integral of Christ-Journé type with homogeneous kernel, Canadian Mathematical Bulletin, 2017. doi:10.4153/CMB-2017-040-1. With Yong Ding
8. Weak type  $(1,1)$  bound criterion for singular integral with rough kernel and its applications. Trans. Amer. Math. Soc, to appear. With Yong Ding

### Papers Under Review or Revision

9. *A note on the discrete Fourier restriction problem.* In revision. With Yong Ding
10. *Weak  $(1,1)$  behavior for Littlewood-Paley  $\mathfrak{g}$  function,* submitted. With Yong Ding

### Work in Progress

11. *Multilinear estimate for the high order Calderón commutator,* preprint.
12. *A bilinear estimate for Calderón commutator with a rough kernel,* preprint.
13. *Calderón-Zygmund theory for rough operator value kernel: a case of  $L^2$  value.* preprint.

### Fellowships & Awards

- Excellent Graduate Student. Beijing Normal University. 2017.
- National Scholarship. Beijing Normal University. 2016.
- Graduate Scholarship of Academic Excellence in Beijing Normal University, 2013, 2014, 2015.
- Chinese Scholar Council. 2015.09-2016.09.
- National Scholarship. South China University of Technology. 2008.

### Invited Presentations

- 2017.08.06 *Weak type  $(1,1)$  bound criterion for singular integral with rough kernel and its applications.* Harbin Institute of Technology.
- 2017.03.17 *Calderón type commutator and its application.* Harbin Institute of Technology.
- 2016.12.30 *Discrete Fourier restriction problem.* Center China Normal University.
- 2016.12.27 *Calderón type commutator and boundary value problem for Laplacian equation.* East Lake International Forum for Outstanding Overseas Young Scholars. Huazhong University of Science and Technology.
- 2016.12.03  *$H^1$  bound for the mixing flow problem.* Conference on the commutator. Wuhan University.
- 2016.11.26 *A general discrete Fourier restriction theorem.* Analysis and Application in Beijing in 2016. Beijing Normal University.
- 2016.11.12 *Unique solvability of the Neumann problem with weighted boundary data.* The 2016 Xiamen Conference on Harmonic Analysis and Applications . Xiamen University.
- 2016.03.11. *Weak type  $(1,1)$  bounds for rough singular integral operators.* Colloquium. University of Wisconsin Milwaukee.
- 2015.11.17. *Weak type  $(1,1)$  bound for singular integral operators with rough kernels.* Analysis Seminar, University of Wisconsin Madison.
- 2015.05.23. *Weak type behavior for singular integral.* The International Conference on Harmonic Analysis and Applications, Central China Normal University.
- 2014.07.10. *Weak type  $(1,1)$  estimate for Christ-Journé commutator.* 2nd East Asian Conference in Harmonic Analysis and Application, Mudanjiang Normal University.
- 2014.03.23. *Weighted bound for commutators.* Harmonic Analysis and Application in Beijing in 2014, University of Science and Technology Beijing.

## Conference Participation

Concentration Day on Harmonic Analysis. Harbin Institute of Technology. 2017.08.06

East Lake International Forum for Outstanding Overseas Young Scholars. Huazhong University of Science and Technology. 2016.12.26-28

Conference on the commutator. Wuhan University. 2016.12.03-04

Analysis and Application in Beijing in 2016. Beijing Normal University. 2016.11.25-26

The 2016 Xiamen Conference on Harmonic Analysis and Applications . Xiamen University. 2016.11.10-11.14

Conference in harmonic analysis in honor of Michael Christ. University of Wisconsin-Madison, May 16-20, 2016, Van Vleck Hall.

The International Conference on Harmonic Analysis and Applications, Central China Normal University. 2015.05.22-05.25.

The Fourth BNU-PDE Workshop, Beijing Normal University. 2014.07.28-08.01.

2nd East Asian Conference in Harmonic Analysis and Application, Mudanjiang Normal University. 2014.07.10-17.

Conference on Harmonic Analysis and Application, Nankai University. 2014.06.10-14.

Harmonic Analysis and Application in Beijing in 2014, University of Science and Technology Beijing. 2014.03.22-03.23.

Harmonic Analysis and Application, Zhejiang Normal University. 2012.10.12-10.16.

Harmonic Analysis and Application in Beijing, Beijing Normal University. 2012.6.16.

CNRS-NSFC Joint Summer Institutes of Mathematics, Peking University. 2012.06.24-07.11.

## Teaching experience

2017.03-06. Foundation of Modern Analysis, Beijing Normal University & Mathematical analysis, Capital Normal University.

2016.09-12. Functional Analysis, Beijing Normal University.

2014.09-12. Functional Analysis, Beijing Normal University.

2014.02-06. Real Analysis, Beijing Normal University.

2013.09-12. Mathematical Analysis III, Beihang University.

2013.02-06. Calculus II-III, Beijing Normal University.

2012.09-12. Mathematical Analysis II, Beijing Normal University.

Last updated: August 31, 2017