Yoon-Joo Kim

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FIELD OF INTEREST

Algebraic geometry; hyperkähler manifolds and cohomology theories.

EDUCATION

Ph.D. Mathematics, Stony Brook University. 2016 – present
Advisor: Radu Laza.
B.S. Mathematics, Seoul National University. 2008 – 2015
B.S. Computer science, Seoul National University. 2008 – 2015

HONORS AND AWARDS

The Presidential Science Scholarship, Korea Student Aid Foundation. 2008 – 2012
2nd place, National Math Competition for college students, Korean Mathematical Society. 2009
Silver Medal, International Mathematical Olympiad. 2007

PAPERS AND PREPRINTS

1. *A conjectural bound on the second Betti number for hyper-Kähler manifolds* (with R. Laza), preprint, arXiv:1909.06924.
2. *The LLV decomposition of hyper-Kähler cohomology* (with M. Green, R. Laza and C. Robles), preprint, arXiv:1906.03432.

STUDENT SEMINAR TALKS

1. *Mori's proof of Hartshorne conjecture*, Algebraic geometry seminar class, October 2017.
2. *Geometry and arithmetic of Dedekind domains*, Graduate student seminar, October 2017.
3. *Variation of Hodge structures and its degeneration*, RTG seminar, October 2017.
4. *Resolution of du Val singularities*, Student algebraic geometry seminar, November 2017.
5. *Definition of descents and stacks*, Student stacks seminar, February 2018.
6. *Hilbert-Mumford criterion for GIT stability*, RTG seminar, February 2018.
7. *Reid's theorem on canonical models*, Student algebraic geometry seminar, March 2018.
8. *Examples of groupoid schemes and stacks*, Student stacks seminar, March 2018.
9. *Minimal surfaces in MMP viewpoint*, Algebraic geometry lecture, August 2018.
10. *Surface singularities*, Algebraic geometry lecture, August 2018.
11. *Compact hyperkähler manifolds: global Torelli theorem*, Graduate student seminar, October 2018.
12. *Kähler-Ricci flow on Hirzebruch surfaces*, RTG seminar, October 2018.
13. *Mumford-Tate group of Hodge structures*, Student algebraic geometry seminar, December 2018.
14. *Higgs bundles and local systems: introducing Simpson's paper*, RTG seminar, March 2019.
15. *Global Torelli theorem for K3 surfaces*, Student algebraic geometry seminar, April 2019.
16. *Chow motive decomposition of algebraic surfaces*, Student motive seminar, July 2019.

17. *Finite dimensionality of Chow motives*, Student motive seminar, July 2019.
18. *Understanding Hodge conjecture*, Graduate student seminar, October 2019.
19. *Homological mirror symmetry for* $\mathbf{P}^1$, RTG seminar, October 2019.
20. *Sheaf cohomology of toric varieties*, Student algebraic geometry seminar, November 2019.

CONFERENCES AND WORKSHOPS ATTENDED

1. AGNES, Stony Brook University, April 2017.
2. Positivity in Arithmetic and Geometry, Paris-Sud University, France, May 2017.
3. Summer school on Intersection Theory, KIAS, South Korea, June 2017.
4. Hodge theory, Moduli, and Representation theory, Stony Brook University, August 2017.
5. AGNES, Northeastern University, October 2017.
6. Simons Collaboration Workshop, Harvard University, January 2018.
7. Griffiths Conference, University of Miami, March 2018.
8. AGNES, Rutgers University, April 2018.
9. Duke Mathematical Journal Conference, Duke University, April 2018.
10. Modern Algebraic Geometry, BICMR, Peking University, China, July 2018.
11. AGNES, Brown University, September 2018.
12. AGNES, University of Massachusetts Amherst, March 2019.
13. Symposium on Hodge Theory, Arithmetic and Moduli, University of British Columbia, May 2019.
14. Discrete groups and moduli, Nagoya University, Japan, June 2019.
15. AGNES, Boston College, September 2019.

SERVICES

- Organizer, Student algebraic geometry seminar, Fall 2018 – Fall 2019.

TEACHING

- TA, Calculus III, Fall 2016.
- TA, Calculus B, Spring 2017.
- Grader, Calculus C, Fall 2017.
- TA, Calculus II, Spring 2018.
- TA, Calculus III, Fall 2018.
- TA, Linear Algebra, Spring 2019.
- TA, Precalculus, Fall 2019.

OTHERS

Skilled at computer programming, especially with C/C++.

Last edited: 11/23/2019