

## Curriculum Vitae

Han-Bom Moon

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### Contact

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### Personal

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- Born April 1982, Busan, Korea. South Korean citizen.
- Visa category: H1B

### Education

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- Ph.D. in Mathematics, Seoul National University, 2011.  
Thesis advisor: Young-Hoon Kiem.  
Thesis title: *Birational geometry of moduli spaces of curves of genus zero.*
- B.S. in Mathematics Education, Seoul National University, graduation with honors (Summa cum laude), 2005.

### Employment

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Aug 2013 ~	Peter M. Curran Visiting Assistant Professor	Fordham University
Aug 2011 ~ Aug 2013	Postdoctoral Associate	University of Georgia

### Research Interests

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Algebraic Geometry and related areas.

- Geometry, topology and combinatorics of moduli spaces.
- Birational geometry of moduli spaces.
- Geometric invariant theory.
- Geometric and numerical properties of conformal blocks.

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## Publications

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1. (with K. Chung) Mori's program for the moduli space of conics in Grassmannian. *Taiwanese J. Math.*, a special issue for *Algebraic Geometry in East Asia 2016*, to appear, arXiv:1608.00181.
2. (With K. Chung) Chow ring of the moduli space of stable sheaves supported on quartic curves. *Q. J. Math.*, to appear, arXiv:1506.00298.
3. (With K. Chung) Moduli of sheaves, Fourier-Mukai transform, and partial desingularization. *Math. Z.*, 283 (2016), no. 1-2, 275-299.
4. (With S.-B. Yoo) Birational geometry of the moduli space of rank 2 parabolic bundles on a rational curve. *Int. Math. Res. Not. IMRN* (2016), no. 3, 827–859.
5. (With D. Swinarski) Effective curves on  $\overline{M}_{0,n}$  from group actions. *Manuscripta Math.*, 147 (2015), no. 1-2, 239–268.
6. Mori program for  $\overline{M}_{0,7}$  with symmetric divisors. *Canad. J. Math.*, to appear, arXiv:1403.7225.
7. Mori program for  $\overline{M}_{0,6}$  with symmetric divisors. *Math. Nachr.*, 288 (2015), no. 7, 824–836.
8. (With A. Gibney, D. Jensen and D. Swinarski) Veronese quotient models of  $\overline{M}_{0,n}$  and conformal blocks. *Michigan Math. J.*, 62 (2013), no. 4, 721–751.
9. (With N. Giansiracusa and D. Jensen) GIT compactifications of  $M_{0,n}$  and flips. *Adv. in Math.*, 248, (2013), 242–278.
10. A family of divisors on  $\overline{M}_{g,n}$  and their log canonical models. *J. Pure Appl. Algebra*, 219 (2015), no. 10, 4642–4652.
11. Log canonical models for the moduli space of stable pointed rational curves. *Proc. Amer. Math. Soc.*, 141 (2013), no. 11, 3771–3785.
12. (With Y.-H. Kiem) Moduli spaces of weighted pointed stable rational curves via GIT. *Osaka J. of Math.*, Vol. 48, (2011) No. 4, 1115–1140.
13. (With Y.-H. Kiem) Moduli spaces of stable maps to projective space via GIT. *Internat. J. Math.*, 21 (2010), no. 5, 639–664.

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## Preprints

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14. (with D. Swinarski) On the  $S_n$ -invariant F-conjecture. preprint, arXiv:1606.02232.
15. (With C. Summers, J. von Albade, and R. Xie) Birational contractions of  $\overline{M}_{0,n}$  and combinatorics of extremal assignments. submitted to *J. Alg. Comb.*, arXiv:1508.03915.

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## In Preparation

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16. (With D. Swinarski) GIT polarizations on moduli spaces of stable pointed curves, in preparation.

17. (With S.-B. Yoo) Conformal blocks and Mori's program for moduli spaces of rank 3 parabolic bundles, in progress.

## Invited Talks

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- (upcoming) Algebraic Geometry seminar, New York University, Spring 2017.
- Classical invariant theory and birational geometry of moduli spaces, Workshop on Combinatorial Moduli Spaces, Fields Institute, December 2016.
- Classical invariant theory and birational geometry of moduli spaces, Seminar talk, Princeton University, November 2016.
- A computational approach to the F-conjecture, Seminar talk, KIAS, Korea, May 2016.
- A computational approach to the F-conjecture, Seminar talk, KAIST, Korea, May 2016.
- Geometric invariant theory and construction of moduli spaces, Mathematics Colloquium, Kyungbuk National University, Korea, May 2016.
- Moduli spaces and birational geometry, Colloquium talk at Department of Mathematics Education, Seoul National University, Korea, May 2016.
- Birational geometry of moduli spaces of parabolic bundles, Seminar talk, Seoul National University, Korea, May 2016.
- Algebraic geometry, moduli spaces, and invariant theory, Seminar talk, Ewha Women's University, Korea, May 2016.
- A computational approach to the F-conjecture, Workshop on Rational Curves and Moduli, Damyang, Korea, May 2016.
- Let's count points!, Math Club talk, Fordham University, December 2015.
- Birational geometry of moduli spaces of parabolic bundles, Seminar talk, Stony Brook University, November 2015.
- Classical invariant theory and birational geometry of moduli spaces, Mathematics Colloquium, Rutgers University-Newark, November 2015.
- Effective curve class computation on moduli of rational curves, Seminar talk, KIAS, Korea, August 2014.
- Alternative compactifications of the moduli space of pointed rational curves, Seminar talk, IBS-CGP, Korea, July 2014.
- Do we really need integrals?, Math Club talk, Fordham University, March 2014.
- Alternative compactifications of the moduli space of pointed rational curves, Seminar talk, KIAS, Korea, January 2014.
- Alternative compactifications of the moduli space of pointed rational curves, Seminar talk, Seoul National University, Korea, December 2013.
- Alternative compactifications of the moduli space of pointed rational curves, Seminar talk, Yale University, November 2013.

- Birational geometry of  $\overline{M}_{0,n}$  and conformal blocks, Seminar talk, KIAS, Korea, July 2013.
- Moduli spaces and their birational geometry, Seminar talk, Ehwa Women's University, Korea, July 2013.
- Euler's product formula and its geometric interpretation, Colloquium talk at Department of Mathematics Education, Seoul National University, July 2013.
- Birational geometry of  $\overline{M}_{0,n}$  and conformal blocks, Seminar talk, KAIST, Korea, July 2013.
- Mori's program for  $\overline{M}_{0,n}$ , Seminar talk, KAIST, Korea, July 2013.
- GIT compactifications of  $M_{0,n}$ , The Asian Mathematical Conference 2013, Busan, Korea, July 2013.
- Compactifications of moduli of curves, Lecture series at KIAS, Korea, June 2013.
- Birational geometry of  $\overline{M}_{0,n}$  and conformal blocks, Seminar talk, Princeton University, March 2013.
- Moduli spaces and their birational geometry, Seminar talk, Fordham University, February 2013.
- Moduli spaces and their birational geometry, Seminar talk, University of Georgia, February 2013.
- Toward a classification of projective modular compactifications of  $M_{0,n}$ , Seminar talk, University of Georgia, October 2012.
- Introduction to Geometric Invariant Theory, Four hours lecture on Summer School on Algebraic Geometry, Sol Beach, Korea, June 2012.
- New family of nef divisors on  $\overline{M}_{0,n}$ , Seminar talk, KIAS, Korea, June 2012.
- GIT compactifications of  $M_{0,n}$ , Seminar talk, KIAS, Korea, June 2012.
- GIT compactifications of  $M_{0,n}$ , Seminar talk, Seoul National University, Korea, June 2012.
- Mori's program for moduli spaces of pointed curves and psi-classes, Seminar talk, University of Georgia, September 2011.
- Moduli spaces and their birational geometry, Algebra camp, Seoul National University, Korea, August 2011.
- Mori's program for moduli spaces of pointed curves and psi-classes, Workshop on Moduli and Birational Geometry, Gyeongju, Korea, July 2011.
- Mori's program for  $\overline{M}_{0,n}$ , Seminar talk, Brown University, May 2011.
- Moduli spaces and its birational geometry, Seminar talk, Chungnam University, Korea, April 2011.
- Mori's program for the moduli space of pointed stable rational curves, Global KMS International Conference, Postech, Korea, October 2010.
- Introduction to moduli spaces, Workshop for Young Mathematicians in Korea, KAIST, Korea, July 2010.
- Elementary construction of the moduli spaces of rational curves via GIT, Mini workshop

- on curves, Seoul National University, Korea, March 2010.
- On GIT constructions of Kontsevich moduli spaces of stable maps, Joint Meeting of the KMS and AMS, Ewha Women's University, Korea, December 2009.
- Cohomology of moduli spaces of stable maps to projective space, Algebra camp, Seoul National University, Korea, January 2008.

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## Teaching Experience

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- At Fordham University
  - Three sections of Calculus II (Spring 2016, Fall 2016)
  - Discrete Mathematics (Fall 2015)
  - Mathematical Modeling (Spring 2015, Spring 2016)
  - Finite Mathematics (Spring 2015)
  - Two sections of Math for Business: Precalculus (Fall 2014)
  - Three sections of Abstract Algebra (Spring 2014, Fall 2014, Fall 2016)
  - Two sections of Math for Business: Calculus (Spring 2014)
  - Multivariable Calculus I (Fall 2013)
  - Three sections of Math for Business: Finite (Fall 2013, Fall 2015)
- At University of Georgia
  - Four sections of Calculus for Engineering and Science II (Fall 2012, Spring 2013)
  - Two sections of Calculus for Engineering and Science I (Spring 2012)
- At Seoul National University
  - Teaching Assistant (2005 - 2011): Calculus I, Calculus II, Honors Calculus I, Honors Calculus II.
  - Grading Assistant (2005 - 2010): Graduate Algebra, Undergraduate Algebra, Algebraic Geometry, Linear Algebra, Differential Geometry, Engineering Mathematics, Geometric Algebra
- Obtained the secondary school mathematics teacher's license in South Korea, February 2005.

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## Mentoring

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- Guided summer research of three undergraduate students Charles Summers, James von Albade, Ranze Xie in Summer 2015. Resulting in the research paper "Birational contractions of  $\overline{M}_{0,n}$  and combinatorics of extremal assignments", arXiv:1508.03915. Supported by Summer Undergraduate Research Grant at Fordham University.
- Guiding a reading seminar on algebraic geometry (Fall 2016).
- Co-advising Math Club at Fordham University since Fall 2016.

- Guided a reading seminar on combinatorics (Summer 2014).
- Organized Graduate student algebraic geometry seminar in University of Georgia (Fall 2011, Fall 2012, Spring 2013).
- Guided Math Club SEHM in Department of Mathematics Education, Seoul National University during 2005–2011.

## Service and Outreach

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- NSA grant reviewer.
- Papers refereed for Journal of Algebra, Bulletin of the Korean Mathematical Society, Journal of Mathematical Society of Japan, and The American Mathematical Monthly.
- Advising Korean Students Association at Fordham University since Fall 2014.
- Organized “Mini workshop on toric varieties”, a graduate student workshop in Seoul National University (January 14–18, 2011).

## Honors and Awards

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- SQuaREs Program Grant on “Computational aspects of GIT with a view toward geometry of moduli spaces”, American Institute of Mathematics.
- Excellent Thesis Award, College of Natural Sciences, Seoul National University, August 2011.
- Award for Outstanding Teaching Assistant, the Faculty of Liberal Education, Seoul National University, February 2006.

## Computing

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- Used Sage, Macaulay2, and Python for research and teaching since 2010.

## References

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- Young-Hoon Kiem (Thesis advisor), Seoul National University, [kiem@math.snu.ac.kr](mailto:kiem@math.snu.ac.kr)
- Izzet Coskun, University of Illinois at Chicago, [coskun@math.uic.edu](mailto:coskun@math.uic.edu)
- Maksym Fedorchuk, Boston College, [maksym.fedorchuk@bc.edu](mailto:maksym.fedorchuk@bc.edu)
- Angela Gibney, University of Georgia, [agibney@math.uga.edu](mailto:agibney@math.uga.edu)
- Joseph Harris, Harvard University, [harris@math.harvard.edu](mailto:harris@math.harvard.edu)
- Ian Morrison, Fordham University, [morrison@fordham.edu](mailto:morrison@fordham.edu)
- Cris Poor (Teaching), Fordham University, [poor@fordham.edu](mailto:poor@fordham.edu)