Curriculum Vitae
Wanmin Liu

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Employment

2015/12 – current: Research Fellow (Postdoc)
IBS Center for Geometry and Physics
Pohang, Republic of Korea

2014/09 – 2015/06:   Research Assistant on a part-time basis
Department of Mathematics
Hong Kong University of Science and Technology (HKUST)

Education

2015:   Ph.D., Hong Kong University of Science and Technology, Hong Kong
Major in Algebraic Geometry, Mathematics
Thesis: Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces
Advisor: Wei-Ping Li

2007:   M.S., Lanzhou University, China
Major in Partial Differential Equations, Mathematics
Thesis: Infinitely many solutions for two noncooperative $p(x)$-Laplacian
elliptic systems.
Advisor: Xian-Ling Fan

2004:   B.S., Lanzhou University, China
Major in Mathematics

Research Interests

Algebraic Geometry: Bridgeland stability conditions, moduli space, derived category,
birational geometry, counting invariants and wall-crossing.

Publications and Pre-prints

2017 ——, Song Yang, Xun Yu, *On exceptional collections of line bundles of maximal length on the blow-ups of* $\mathbb{P}^3$, CGP17025 preprint.

2015 ——, *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*, Ph.D. Thesis, HKUST.

2015 ——, *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*, to appear in Kyoto J. Math. arXiv:1501.06397.

Scientific/Academic Honours and Grants

2017	IBS-CGP Research Grant.
2016	IBS-CGP Research Grant.
2015	UGC Research Travel Grant, RTG14/15.SC049, HKUST.
2011	The Din-Yu Hsieh Teaching Award (Best TA) of the Department of Mathematics of HKUST.
2007 – 2011	Postgraduate Studentships, HKUST, - Doctorate.
2004 – 2007	Postgraduate Studentships, Lanzhou University, - Masters.

Selected Seminars and Presentations

2017 Aug.   Hunan University, Changsha. Algebraic Seminar: *How to use Bridgeland stability wall-crosssings to study birational geometry of moduli spaces?*.

—— July   Yonsei University, Seoul. Yonsei Algebraic Seminars: *How to use Bridgeland stability wall-crosssings to study birational geometry of moduli spaces?*.

—— July   IBS Center for Geometry and Physics, Pohang. IBS-CGP Derived Seminar: *Maps in the Homotopy Category of dg-Categories*, notes.

—— June   Seoul National University, Seoul. Workshop on Moduli theory and Derived category: *On exceptional collections of line bundles of maximal length on the blow-ups of $\mathbb{P}^3$*.

—— Feb.   CUHK, Hong Kong. Lecture Series in Algebraic Geometry: *Bridgeland Stability Conditions (I), (II), (III)* (6 hours mini-course).

2016 Sep.   KIAS, Seoul, Republic of Korea. I-Seminar: *Bridgeland stability conditions and wall-crossing*.

—— Aug.   Yau Mathematical Sciences Center, Tsinghua University, Beijing, China. Algebraic Geometry Seminar: *On Bayer-Macrì's line bundle theory over Bridgeland moduli space*.

—— May   KIAS, Damyang Resort, Republic of Korea. Workshop on rational curves and moduli: *Two facets of birational geometries of moduli space of sheaves over surface* (Two talks).

—— Apr.   POSTECH, Pohang, Republic of Korea. T-Seminar: *Two facets of birational geometries of moduli space of sheaves over surface*.

—— Mar.   KIAS, Seoul, Republic of Korea. Algebraic Geometry Seminar: *Two facets of birational geometries of moduli space of sheaves over surface I and II* (Two talks).

2015 Nov.   HKUST, Hong Kong. HKUST Seminar on Geometry: *Lectures on Bayer-Macrì's Nef Line Bundle Theory* (Two lectures).

—— Mar.   Chinese University of Hong Kong, Hong Kong. CUHK/UM Joint International Workshop in Geometry: *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*.

—— Mar.   IBS Center for Geometry and Physics, Pohang, Republic of Korea. *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*.

—— Feb.   University of Stavanger, Stavanger, Norway. The Stavanger Algebraic Geometry Seminar: *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*.

—— Feb.   KTH Royal Institute of Technology, Stockholm, Sweden. KTH & SU Algebra and Geometry Seminar: *Bayer-Macrì decomposition on Bridgeland moduli spaces over surfaces*.

2014 Nov.   The University of Hong Kong, Hong Kong. Geometry Seminar: *Perverse coherent sheaves on blow-ups*.

—— Mar.   HKUST, Hong Kong. HKUST PhD Student Seminar: *Some Bridgeland stability conditions on an elliptic K3 surface with a section*.

2013 Apr.   HKUST, Hong Kong. HKUST Department Seminar on Pure Mathematics: *Perverse coherent sheaves on blow-ups* (Three lectures).

—— Feb.   HKUST, Hong Kong. HKUST PhD Student Seminar: *Bridgeland moduli space on $\mathbb{P}^2$ and wall-crossing*.

2012 Apr.   HKUST, Hong Kong. HKUST PhD Student Seminar: *Wall-chamber structures on the Bridgeland stability conditions on surfaces*.

2011 Sept   HKUST, Hong Kong. HKUST PhD Student Seminar: *Notes on Bridgeland stability conditions on surfaces*.

2010 May   HKUST, Hong Kong. HKUST PhD Student Seminar: *Moduli spaces of framed sheaves*.

2009 June   HKUST, Hong Kong. HKUST PhD Student Seminar: *Grothendieck's Quot-scheme*.

Selected Conferences Attended

2017 Sep.   **String Field Theory of Landau-Ginzburg models**, IBS Center for Geometry and Physics, Pohang, Republic of Korea, *upcoming*.

—— Aug. **Pacific Rim Complex-Symplectic Geometry Conference**, IBS Center for Geometry and Physics, Pohang, Republic of Korea.

—— June **Summer school: Intersection theory on schemes and stacks**, Korea Institute for Advanced Study, Seoul, Republic of Korea.

—— Apr. **Introduction to algebraic stacks**, Korea Institute for Advanced Study, Seoul, Republic of Korea.

—— Feb. **Cluster Algebras and Log GW Invariants in GS program**, Korea Institute for Advanced Study, Seoul, Republic of Korea.

—— Feb. **Mathematics Inspired by String Theory**, IMS - The Chinese University of Hong Kong, Hong Kong.

—— Jan. **Stability conditions, Donaldson-Thomas invariants and cluster varieties**, University of Sheffield, Sheffield, United Kingdom.

2016 Nov. **BICMR & IBS-CGP Joint Symplectic Geometry Workshop**, Organized by BICMR and IBS-CGP, Jeju, Republic of Korea.

—— Aug. **The 7th International Congress of Chinese Mathematicians**, Organized by Academy of Mathematics and Systems Science and the Morningside Center of Mathematics, Beijing, China.

—— May **Workshop on Moduli Spaces of Rational Curves**, Organized by Korea Institute for Advanced Study, Damyang Resort, Republic of Korea.

—— Mar.-Apr. **Hausdorff School on "Derived Categories: dimensions, Stability conditions, and Enhancements"**, Hausdorff Center for Mathematics, Bonn, Germany.

—— Mar. **Mathematics Inspired by String Theory**, IMS - The Chinese University of Hong Kong, Hong Kong.

—— Jan. **Matrix Factorization Day (KIAS specialized study workshop)**, Korea Institute for Advanced Study, Seoul, Republic of Korea.

—— Jan. **Winter School "Winter School on Algebraic Surfaces 2016"**, Korea Institute for Advanced Study, Seoul, Republic of Korea.

—— Jan. **Winter School "Rational Curves on Algebraic Varieties"**, Organized by Korea Institute for Advanced Study, Busan, Republic of Korea.

—— Jan. **String Field Theory of the B-Model**, IBS Center for Geometry and Physics, Pohang, Republic of Korea.

2015 July **2015 Summer Research Institute on Algebraic Geometry**, University of Utah, Salt Lake City, USA.

—— Feb. **Workshop "Geometry from stability conditions"**, University of Warwick, Coventry, United Kingdom.

2014 Dec. **Advanced Seminar on Symplectic Geometry and Topological Field Theory**, Beijing International Center for Mathematical Research, Peking University, Beijing, China.

2013 July **Gromov-Witten Theory and Quantization**, HKUST, Hong Kong, 2013/07.

—— Mar. **Graduate Student Workshop on Moduli Spaces and Bridgeland Stability**, University of Illinois at Chicago, Chicago, USA.

2010 Aug. **Categorical Methods in Geometry and Gauge Theory**, Chern Institute, Nankai University, Tianjin, China.

2008-2015 **Hong Kong Geometry Colloquium**, Joint by the Chinese University of Hong Kong (CUHK), the University of Hong Kong (HKU) and the Hong Kong University of Science and Technology (HKUST), Hong Kong, regularly.

Invited Academic Visits

2017 Aug Prof. Mu-Lin Li at the Hunan University at Changsha (China) during 7-Aug-2017 – 11-Aug-2017.

—— July Prof. Sung Rok Choi at the Yonsei University at Seoul (Republic of Korea) during 26-Jul-2017 – 29-Jul-2017.

—— June Prof. Young-Hoon Kiem at the Seoul National University during 10-Jun-2017 – 16-Jun-2017.

—— Feb. Prof. Conan Leung and Dr. Yu Qiu at the Chinese University of Hong Kong (CUHK) during 05-Feb-2017 – 18-Feb-2017.

—— Jan. Dr. Yalong Cao at the Kavli Institute for the Physics and Mathematics of the Universe (IPMU) at Tokyo (Japan) during 22-Jan-2017 – 29-Jan-2017.

2016 Nov. Prof. Jason Lo at the California State University Northridge at Los Angeles (US) during 16-Nov-2016 – 20-Dec-2016.

—— Aug. Prof. Yao Yuan at the Tsinghua University at Beijing (China) during 12-Aug-2016 – 21-Aug-2016.

—— Mar. Dr. Chunyi Li at the University of Edinburgh (UK) during 14-Mar-2016 – 28-Mar-2016.

2015 Dec. Prof. Wei-Ping Li at HKUST (Hong Kong) during 17-Dec-2015 – 23-Dec-2015.

—— June Dr. Kiryong Chung at Korea Institute for Advanced Study (KIAS) at Seoul (Republic of Korea) (Canceled).

—— Mar. IBS Center for Geometry and Physics at Pohang (Republic of Korea) during 2-Mar-2015 – 5-Mar-2015.

—— Feb. Prof. Martin G. Gulbrandsen at University of Stavanger (Norway) during 24-Feb-2015 – 26-Feb-2015.

—— Feb. University of Warwick (UK) during 14-Feb-2015 – 21-Feb-2015.

2013 Oct. Dr. Changzheng Li at the Kavli Institute for the Physics and Mathematics of the Universe (IPMU) at Tokyo (Japan) during 20-Oct-2013 – 27-Oct-2013.

Visitors

2017 Aug Prof. Song Yang at the Tianjin University (Tianjin, China) during 13-Aug-2017 – 26-Aug-2017.

—— July Dr. YongJoo Shin at the Korea Advanced Institute of Science and Technology (Daejeon, Republic of Korea) during 24-Jul-2017 – 25-Jul-2017.

—— July Prof. Changzheng Li at the Sun Yat-sen University (Guangzhou, China) during 17-Jul-2017 – 21-Jul-2017.

—— June Prof. Jason Lo at the California State University Northridge (US) during 16-Jun-2017 – 16-Jul-2017.

2016 May Dr. Jason Lo at the University of Illinois at Urbana-Champaign (US) during 24-May-2016 – 04-Jun-2017.

Teaching Activities

Mini-Courses

2017 Feb.   Lecture Series in Algebraic Geometry: *Bridgeland Stability Conditions (I), (II), (III)* (6 hours mini-course), the Institute of Mathematical Sciences, CUHK.

Teaching assistant at Hong Kong University of Science and Technology (All courses were taught in English.)

2011 Spring Ordinary Differential Equation
2010 Fall   Differential Geometry
2009 Fall   Concept in Math
2009 Fall   Linear Algebra
2009 Spring Analysis
2008 Fall   Differential Geometry

2008 Spring Complex Analysis

Teaching assistant at Lanzhou University

2004 Fall   Functional Analysis
2004 Spring   Differential Geometry

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