CURRICULUM VITAE

Jun Yu

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Affiliation

- Jan. 2022-current, Associate Professor, School of Mathematical Sciences and BICMR, Peking University, China.
- Aug. 2021-Dec. 2021, Associate Professor, BICMR, China.
- July 2015-July. 2021, Assistant Professor, Beijing International Center for Mathematical Research, Peking University, China.
- July 2014-June 2015, Postdoc, MIT, U.S.A.
- Jan. 2013-June 2014, Member, IAS Princeton, U.S.A.

Education

- 2009-2012, PhD student, ETH Zurich, Switzerland, advisor: Brent Doran.
- 2005-2009, Graduate student, HKUST, Hong Kong, advisor: Jing-Song Huang.
- 2001-2005, Undergraduate student, Peking University, China.

Research Area: Lie groups, representations theory, automorphic forms.

Awards and grants

- National Science Foundation of China, Principal Investigator, "Branching rule and orbit method". 2020-2023.
- Recruit Program for Global Young Experts, Principal Investigator, 2016-2019.
- Startup foundation of Peking University, 2015-2018.
- AMS-Simons Travel Grant, 2014-2016.

Publications

1. *Maximal antipodal sets in irreducible compact symmetric spaces.* Transformation Groups. To appear.
2. *Acceptable compact Lie groups.* Peking Math. J. **5** (2022), no. 2, 427-446.
3. *Some new results on dimension datum.* Bull. Lond. Math. Soc. **54** (2022), no. 3, 929-948.
4. *A proof of Casselman's comparison theorem.* Representation Theory **25** (2021), 994-1020. Joint with Ning Li and Gang Liu.
5. *Weighted badly approximable vectors and games.* IMRN (2019), no. 3, 810-833. Joint with Lifan Guan.
6. *Maximal abelian subgroups of compact simple Lie groups of type E.* Geom. Dedicata, **185** (2016), 205-269.
7. *On the dimension datum of a subgroup.* Duke Math. J., **165** (2016), no. 14, 2683-2736.
8. *Rational rigidity for* $\mathrm{F}_4(p)$. Advances in Mathematics, **302** (2016), 48-58. Joint with Robert Guralnick and Frank Lübeck.
9. *A compactness result for dimension datum.* IMRN (2015), no. 19, 9438-9449.
10. *Algebraic vector bundles on the algebraic odd spheres and punctured affine spaces.* Advances in Mathematics, **257** (2014), 337-348. Joint with Brent Doran.
11. *On the dimension datum of a subgroup and its application to isospectral manifolds.* JDG, **94** (2013), no. 1, 59-85. Joint with Jinpeng An and Jiu-Kang Yu.

12. *Elementary abelian 2-subgroups of compact Lie groups.* Geom. Dedicata, **167** (2013), 245-293.

13. *Klein four-subgroups of Lie algebra automorphisms.* Pacific Journal of Mathematics, **262** (2013), no. 2, 397-420. Joint with Jing-Song Huang.

14. *Existence of universal entangler.* Journal of Mathematical Physics, **49** (2008), no. 1. Joint with Jianxin Chen, et al.

Preprints

1. *The functorial source problem via dimension data.* arXiv:2111.13341.

2. *A strong multiplicity one theorem for dimension data.* arXiv:2111.13343.

3. *Restriction of irreducible unitary representations of* $\mathrm{Spin}(N,1)$ *to parabolic subgroups.* arXiv:2010.01026. Joint with Gang Liu and Yoshiki Oshima.

4. *A geometric interpretation of Kirillov's conjecture.* arXiv:1806.06318. Joint with Gang Liu.

5. *Twisted root systems of a* $(*)$*-subgroup.* Preprint, arXiv:1805.06330.

Teaching activities (all are in Peking University)

1. Spring 2023, Modular forms and Number Theory. Graduate Course.

2. Fall 2022, Basic Number Theory (primes of the form $x^2 + ny^2$). Undergraduate Course.

3. Spring 2022, Advanced Mathematics B. Undergraduate Course.

4. Fall 2021, Advanced Mathematics D. Undergraduate Course.

5. Spring 2021, Topics in Representation Theory II (representations of reductive p-adic groups). Graduate Course.

6. Fall 2020, Topics in Representation Theory I (representations of reductive p-adic groups). Graduate Course.

7. Spring 2020, Functional Analysis. Undergraduate Course.

8. Fall 2019, Basic Number Theory (Galois cohomology). Undergraduate Course.

9. Spring 2019, Theory of Complex Functions. Undergraduate Course..

10. Fall 2018, Basic Number Theory (quadratic forms and modular forms). Undergraduate Course.
11. Spring 2018, Functional Analysis. Undergraduate Course.
12. Fall 2017, Abstract Algebra. Undergraduate Course.
13. Spring 2017, Theory of Complex Functions. Undergraduate Course.
14. Fall 2016, Algebraic Geometry II (geometric invariant theory). Graduate Course.
15. Fall 2015, Commutative Algebra. Graduate Course.

Current postdoc

1. Xiaocheng Li.

Former postdocs

1. Ning Li. 2020/07-2022/06, currently assistant professor in Nankai University, China.
2. Arnaud Mayeux. 2019/09-2021/09, currently postdoc in University of Clermont, France.
3. Lovy Singhal, 2017/11-2019/10, currently postdoc in Yau's center at Tsinghua University, China.
4. Huajian Xue, 2017/07 - 2019/06, currently assistant professor in Shantou University, China.
5. Zhengfang Wang, 2017/03 - 2019/02, currently postdoc in University of Stuttgart, Germany.
6. Rex Cheung, 2016/10 - 2018/09.

Graduate student

1. Hongrui Yuan, 2020-current. Master student.

Finished graduate student

1. Hongfeng Zhang, 2016-2021. PhD Student.

Undergraduate students supervised

1. Year 2022: Zixuan Feng and Yicheng Cheng (2).
2. Year 2021: Yuanyang Jiang, Yazhen Li, Lu Zhang, Chuanzhe Zhao (4).
3. Year 2020: Guodong Xi, Hongrui Yuan (2).
4. Year 2019: Yi Luo (1).
5. Year 2017: Shengmei An (1).

Organized conferences

1. Sep. 1-6, 2020, *Associated Varieties and Unipotent Representations* (online conference via Zoom). Jointly organized with David Vogan. BICMR, Peking University, China.
2. June 26-30, 2018, *Summer School on Representation Theory and the GGP Conjecture*. Jointly organized with Liang Xiao. BICMR, Peking University, China.
3. July 3-8, 2017, *Workshop on Lie group representations and automorphic forms*. Jointly organized with Dihua Jiang. BICMR, Peking University, China.

Invited talks

1. *Representation theory seminar* (online), Zhejiang University, Hangzhou, China. *"A proof of Casselman's comparison theorem"*. Dec. 2022.
2. *Mini-conference on the representation theory of reductive groups (online)*, Nankai University, Tianjin, China. *"Restriction of unitary representations of* $\mathrm{Spin}(N,1)$ *to a parabolic subgroup"*. Aug. 2022.
3. *Representation theory seminar* (online), National University of Singapore, Singapore. *"The functorial source problem via dimension data"*. April 2022.
4. *Representation theory seminar* (online), Fudan University, Shanghai, China. *"A proof of Casselman's comparison theorem"*. Dec. 2021.
5. *Symposium on Number Theory and Representation Theory* (offline), Zhejiang University, Hanzhou, China. *"Restriction of unitary representations of* $\mathrm{Spin}(N,1)$ *to parabolic subgroups"*. May 2021.

6. *Representation theory workshop (online)*, Soochow University, Suzhou, China. *"Restriction of unitary representations of* $\mathrm{Spin}(N,1)$ *to parabolic subgroups"*. Nov. 2020.

7. *Beijing-Moscow Mathematics Colloquium–Lecture Series VII* (online), Peking University, Beijing, China. *"Restriction of unitary representations of* $\mathrm{Spin}(N,1)$ *to parabolic subgroups"*. Oct. 2020.

8. *Qingdao Symposium-"Advances and Perspectives in Representation Theory*, Shandong University at Qingdao, Qingdao, China. *"Restriction to a minimal parabolic subgroup of tempered representations of Spin(2n,1)"*. Oct. 2019.

9. *The 9th Conference of TSIMF–Langlands functoriality, L-functions and Trace formula*, TSIMF, Sanya, China. *"Dimension data of non-connected subgroups"*. Dec. 2018.

10. *Geometric representation seminar*, Tsinghua University, Beijing, China. *"A geometric interpretation of Kirillov's conjecture"*. Nov. 2018.

11. *Workshop on Automorphic forms, representations of Lie groups and several complex variables*, Chinese Academy of Science, Beijing, China. *"A geometric interpretation of Kirillov's conjecture"*. July 2018.

12. *AMS-CMS joint meeting*, Shanghai, China. *"On the dimension datum of a subgroup."* June 2018.

13. *Representation/Number Theory seminar*, National University of Singapore, Singapore. *" The moment map for restriction from Spin(2n,1) to a parabolic subgroup"*. Feb. 2018.

14. *Number theory seminar*, Yau center at Tsinghua University, Beijing, China. *"On the dimension datum of a subgroup"*. Dec. 2017.

15. *FUDAN-USTC Joint Workshop on Spectral Geometry*, USTC, Hefei, China. *"Isospectral homogeneoups manifolds and isospectral homogeneous vector bundles"*. Dec. 2017.

16. *Colloquium talk*, Southern University of Science and Technology, Shenzhen, China. *"Maximal antipodal sets in irreducible compact symmetric spaces"*. Sep. 2017.

17. *Colloquium talk*, Beijing Normal University, Beijing, China. *"Maximal antipodal sets in irreducible compact symmetric spaces"*. March 2017.

18. *Annual meeting of LNAM*, Peking University, Beijing, China. *"Abelian subgroups and root systems."* Dec. 2016.

19. *Annual meeting of Chinese Mathematical Society*, Hohhot, China. *"Abelian subgroups of almost simple linear algebraic groups."* Sep. 2016.

20. *GAP (geometry, analysis and probability) seminar*, USTC, Hefei, China. *"Construction of isospectral manifolds with different topologies."* May 2016.

21. *Basic notion seminar*, Chinese Academy of Science, Beijing, China. *"The inverse Galois problem"*. April 2016.

22. *Workshop on Automorphic Forms, Geometry and Representation Theory*, Zhejiang University, Hangzhou, China. *"Badly approximable vectors in a Euclidean space"*. July 2015.

23. *AMS Southeastern Sectional Meeting*, University of North Carolina, Greensboro, U.S.A. *"Abelian subgroups of almost simple linear algebraic groups."* Nov. 2014.

24. *Lie groups seminar*, MIT, Massachusetts, U.S.A. *"Subgroups with the same spectrum."* Sep. 2014.

25. *Lie theory seminar*, HKUST, Hong Kong. *"On the dimension datum problem."* Aug. 2014.

26. *Number theory seminar*, CUHK, Hong Kong. *"Rational rigidity for* $\mathbf{F_4}$*."* Aug. 2014.

27. *Workshop on Automorphic Forms and Representations*, Chinese Academy of Science, Beijing, China. *"Rational rigidity for* $\mathbf{F_4}$*."* July 2014.

28. *Special Lecture*, University of Michigan, U.S.A. *"Can one hear the shape of a drum."* March 2014.

29. *Advances in the Theory of Automorphic Forms and their L-Functions, workshop*, The Erwin Schrödinger International Institute for Mathematical Physics (ESI), Vienna, Austria. *"The ℓ-independence question of algebraic monodromy groups."* Oct. 2013.

30. *Algebra-topology Seminar*, University of Copenhagen, Denmark. *"Elementary abelian p-subgroups of Lie groups."* Jan. 2012.

31. *Moduli Spaces Program*, Newton Institute, Cambridge University, United Kingdom. *"Vector bundles on the algebraic 5-sphere and punctured affine 3-space."* May 2011.