Kathy Qing Ji (季 青)   **Curriculum Vitae**

Contact Information

Center for Applied Mathematics   Office Phone: 86-022-2740-5389

Tianjin University   **http://cam.tju.edu.cn/~ji**

Tianjin 300072   Email: kathyji@tju.edu.cn

P.R. China

Research Interests

- Enumerative and bijective combinatorics

- Partitions and q-series

Professional experience

- Sept. 2007--Dec. 2010, Assistant Professor,

    Center for Combinatorics, Nankai University, China.

- Jan. 2011--May 2015, Associate Professor,

    Center for Combinatorics, Nankai University, China.

- Jane 2015--present, Professor,

    Center for Applied Mathematics, Tianjin University, China.

Education

- June 2007: PhD in Mathematics, Nankai University, P.R. China.

    Advisor :Williams Y.C. Chen.

    Thesis title : "Partition identities bijections and involutions"

- June 2003: BS in Mathematics and Computer Science, Nanjing Normal University, P.R.

    China

Publications

1. BG-ranks and 2-cores (with William Y. C. Chen and Herbert S. Wilf), Electron. J. Combin. 13(1) (2006) N18.

2. Weighted forms of Euler's theorem (with William Y. C. Chen), J. Combin. Theory Ser. A 114 (2007) 360--372.

3. Extreme palindromes (with Herbert S. Wilf,), Amer. Math. Monthly, 115 (2008), no. 5, 447--451.

4. A combinatorial proof of Andrews' smallest parts partition function, Electron. J. Combin. 15 (2008) N12.

5. On Stanley's Partition Function (with William Y. C. Chen and Albert J.W. Zhu), Electron. J. Combin. 17 (2010) #N31.

6. A unification of two refinements of Euler's partition theorem (with William Y. C. Chen, Henry Y. Gao and Martin Y. X. Li,), Ramanujan J. 23 (2010) 137--149.

7. The combinatorics of k-marked Durfee symbols, Trans. Amer. Math. Soc. 363 (2011) 987--1005.

8. Combining hook length formulas and BG-ranks for partitions via the Littlewood decomposition (with Guo-Niu Han), Trans. Amer. Math. Soc. 363 (2011) 1041--1060.

9. Partition identities for Ramanujan's third order mock theta functions (with William Y. C. Chen and Eric H. Liu), Quart. J. Math. 63 (2012) 353--365.

10. On the number of partitions with designated summands (with William Y. C. Chen, Hai-Tao Jin, and Erin Y.Y. Shen), J. Number Theory 133 (2013) 2929--2938.

11. On the positive moments of ranks of partitions (with William Y.C. Chen and Erin Y.Y. Shen), Electron. J. Combin. 21(1) (2014) P1.29.

12. Proof of the Andrews-Dyson-Rhoades conjecture on the spt-crank (with William Y.C. Chen and Wenston J.T. Zang), Adv. Math. 270 (2015) 60--96.

13. The Bailey transform and Hecke-Rogers identities for the universal mock theta functions (with Alice Zhao), Adv. Appl. Math. 65 (2015) 65--86.

14. Bilateral truncated Jacobi's identity (with Thomas Y. He and Wenston J.T. Zang), Europ. J. Combin. 51 (2016) 255--267.

15. The spt-crank for ordinary partitions (with William Y.C. Chen and Wenston J.T. Zang), J. Reine Angew. Math. 711 (2016), 231–249.

16. Combinatorial proof of a partial theta function identity of Warnaar (with Byungchan Kim and Jang Soo Kim,), Int. J. Number Theory 12 (2016) 1475–1482.

17. The crank moments weighted by the parity of cranks (with Alice X.H. Zhao), Ramanujan J. 44 (2017) 631–640.

18. Ranks of overpartitions modulo 6 and 10 (with Helen W. J. Zhang and Alice X.H. Zhao), J. Number Theory 184 (2018) 235-269.

19. Nearly equal distributions of the rank and the crank of partitions (with William Y.C. Chen and Wenston J.T. Zang,), In: G.E. Andrews and F. Garvan (eds.), Analytic Number Theory, Modular Forms and q-Hypergeometric Series, Springer Proceedings in Mathematics & Statistics 221

20. An overpartition analogue of the Andrews-Göllnitz-Gordon theorem (with Thomas Y. He，Allison Y.F. Wang and Alice X.H. Zhao), J. Combin. Theory Ser. A 166 (2019) 254–-296.

21. Unimodality of the Andrews-Garvan-Dyson cranks of partitions (with Wenston J.T. Zang), Adv. Math. 393 (2021) 108053.

22. A Combinatorial Proof of a Schmidt Type Theorem of Andrews and Paule, Electron. J. Combin. 29 (2022) P1.24.

23. The q-log-concavity and unimodality of q-Kaplansky numbers, Discrete Math. 345 (2022) 112821.

24. Overpartitions and Bressoud's conjecture, I (with Thomas Y. He, and Alice X.H. Zhao), Adv. Math. 404 (2022), Paper No. 108449, 81 pp.

25. A cyclic analogue of Stanley's shuffling theorem (with Dax T.X. Zhang), Electron. J. Combin., 29 (2022) P4.20.

26. Turán inequalities for the broken k-diamond partition function (with Janet J.W. Dong and Dennis X.Q. Jia), Ramanujan J. to appear.

27. Unimodality of partition polynomials related to Borwein's conjecture (with Janet J.W. Dong), Ramanujan J. to appear.

28. 0-1 Tableaux and the p,q-Legendre-Stirling numbers of the second kind (with Lora R. Du), Discrete Math., to appear

Teaching

<u>Undergraduate courses:</u> Calculus I, Calculus II, and Linear Algebra

<u>Graduate courses:</u> Enumerative Combinatorics, The Theory of Partitions

Refereeing

- J. Combin. Theory Ser. A

- European Journal of Combinatorics

- Ramanujan Journal

- Electronic Journal of Combinatorics

- Discrete Mathematics

- Journal of Number Theory

- Annals of Combinatorics

- Journal of Combinatorics and Number Theory

- Acta Mathematicae Applicatae Sinica, English Series

- American Mathematical Monthly

- Science China Mathematics

- Acta Mathematica Sinica, English Series

- Journal of Mathematical Research with Applications

- Mathematics

Reviewing

- AMS Mathematical Reviews

Conferences with invited presentations

◆ August 20-22, 2021, "Ranks and Cranks of Partitions" at the Eleventh Cross-Strait Conference on Combinatorics and Graph Theory, Shandong, P.R. China.

◆ January 28-31, 2019, "Inequalities on Ranks and Cranks of Partitions", at 2019 q-Day: q-series and related topics, Korea Institute for Advanced Study, South Korea.

◆ July 25-August 15, 2018, "Inequalities on Ranks and Cranks of Partitions" at Summer Research Institute on q-Series, Nankai University, Tianjin, P. R. China.

- June 26-30, 2015, "On the spt-Crank of Vector Partitions" at 2015 international conference on Graph Theory and Combinatorics, National Sun Yat-Sen University, Kaohsiung, Taiwan.

- October 24--26, 2014, "Mock Theta Functions" at the workshop on combinatorics and applications, Chongqing University, Chongqing, P.R. China.

- August 2-4, 2013, "Partitions and the odd moments of ranks and cranks" at the international conference on the Combinatorics of q-Series and Partitions- in Honor of Professor George   Andrews' 75th Birthday, Tianjin, P.R. China.

- July 15-18, 2012, "Ramanujan congruences for partition function" at the Fifth National Conference of China on Combination and Graph Theory, Luoyang, Henan, China

Conferences

- July 6--12, 2015, the International Symposium on Symbolic and Algebraic Computation, University of Bath, Bath, United Kingdom.

- June 23 --27, 2014, Stanley@70——A conference in honor of Richard P. Stanley's 70th birthday, MIT, USA.

- 30 May – 3 Jun 2011, The International Conference on Asymptotics and Special Functions, Liu Bie Ju Centre for Mathematical Sciences, City University of Hong Kong, Hong Kong.

- August 2-6, 2010, The 22th International Conference on Formal Power Series and Algebraic Combinatorics, San Francisco State University, San Francisco, USA

- July 2-6, 2007, The 19th International Conference on Formal Power Series and Algebraic Combinatorics, Nankai University, Tianjin, China

- June 11-15, 2007, The International Conference on Computational Geometry and Graph Theory - in Honor of J. Akiyama and V. Chvatal on their 60th birthday, Kyoto, Japan.

- August 16 - 19, 2006 , The Second China National Conference on Combinatorics and Graph Theory, Nankai University, Tianjin, China.

- April 21 - 25, 2006, The Spring Workshop on Combinatorics and Graph Theory, Nankai University, Tianjin, China.

- November 18 - 24, 2005, The China-Japan Joint Conference on Discrete Geometry, Combinatorics and Graph Theory, Nankai University, Tianjin, China

- August 2 - 4, 2004 , Combinatorics, Special Functions and Physics In Honor of the 75th Birthday of James D. Louck, Nankai University, Tianjin, China

- February 25 - 27, 2004, Paths, Permutations and Trees, Nankai University, Tianjin, China.

Professional Grants

- National Science Foundation of China grant entitled "The Study of Unimodal Sequences in Theory of Partitions" for the period Jan. 2022 to Dec. 2025. Total project funding￥500,000 .

- The National Science Fund for Excellent Young Scholars entitled "Combinatorial Methods in the Theory of Partitions" for the period Jan. 2018—Dec. 2020. Total project funding￥1,300,000.

- National Science Foundation of China grant entitled "Algebraic methods in combinatorics" for the period Jan. 2013 to Dec. 2017. Total project funding ￥2,300,000 .

- National Science Foundation of China grant entitled "partition identities and their applications on q-series and symmetric functions" for the period Jan. 2009 to Dec. 2012. Total project funding￥160,000 .