

Curriculum Vitae of Huajun Huang

Personal Information

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Education: Ph.D. [Yale University](#), advisor [Roger Howe](#), May 2004.
B.A. [University of Science and Technology of China](#), July 1998.

Member: [American Mathematical Society](#).

Research Interests

I am interested in the structures of algebraic groups and Lie groups, matrix theory, quadratic forms, and algebraic combinatorics. Below is a list of my recent research topics:

Accepted or Published:

1. *On Gelfand-Naimark decomposition of a nonsingular matrix*, with Tin-Yau Tam, accepted, *Linear and Multilinear Algebra*.
2. *Some extensions of Witt's theorem*, accepted, *Linear and Multilinear Algebra*.
3. *An asymptotic result on the a-component in Iwasawa decomposition*, with Tin-Yau Tam, *Journal of Lie Theory*, **17** (2007), 469-479.
4. *Some asymptotic behaviors associated with matrix decomposition*, with Tin-Yau Tam, the Special Issue of *International J. of Information & Systems Sciences on Matrix Analysis and Applications*, **Vol 4 (No. 1)**, 2008, 148-159.
5. *On the convergence of Aluthge sequence*, with Tin-Yau Tam, *Operators and Matrices*, **1**, 2007, 121-142.
6. *An asymptotic behavior of QR decomposition*, with Tin-Yau Tam, *Linear Algebra and its Applications*, **424**, 2007, 96-107.
7. *An extension of Yamamoto's Theorem on the eigenvalues and singular values of a matrix*, with Tin-Yau Tam, *Journal of the Mathematical Society of Japan*, **Vol 58 (No. 4)**, 2006, 1197-1202.
8. *On the QR iterations of real matrices*, with Tin-Yau Tam, *Linear Algebra and its Applications*, **408**, 2005, 161-176.

Submitted:

1. *Aluthge iteration in semisimple Lie group*, with Tin-Yau Tam, submitted.
2. *Borel orbits and invariants of classical symmetric subgroups on multiplicity-free Grassmannians (II)*, submitted.

Manuscript:

1. *Asymptotic behavior of Iwasawa and Cholesky iterations*, with Randall R. Holmes and Tin-Yau Tam, in preparation.
2. *Borel orbits and invariants of two classical symmetric pairs on flag manifolds*, manuscript.
3. *Borel orbits and invariants of classical symmetric subgroups on multiplicity-free Grassmannians (I)*, manuscript.
4. *Borel subgroup orbits of classical symmetric subgroups on multiplicity-free flag manifolds*, PhD dissertation (advisor Roger Howe).

Talks and Visitings

- June 26, 2008, Auburn University, ([GK-12 Math Fellow Meeting](#))
[The Pythagorean Theorem: proof and generalizations](#)
- March 24, 2007, Auburn University, ([Robert C. Thompson Matrix Meeting](#))
[On Gelfand-Naimark decomposition of a nonsingular matrix](#)
- December 15-17, 2006, Nova Southeastern University
([2nd International Workshop on Matrix Analysis and Applications](#))
[On the convergence of Aluthge sequence.](#)
- October 29, 2006, Auburn University, ([Southeastern Algebra Conference](#))
[On the convergence of Aluthge sequence.](#)
- June 8-17, 2006, Nankai University, Tianjin, China
[Summer School: Representation Theory and Harmonic Analysis.](#)
- June 4-6, 2006, China University of Mining Technology, Xuzhou, China
[Borel orbits and invariants of symmetric subgroups on flag manifolds.](#)
- October 27, 2005, University of South Alabama
[Borel orbits of symmetric subgroups on flag manifolds.](#)
- April 14, 2005, Auburn University
[Linear algebra, Lie groups, Lie algebras, and representation theory.](#)
- March 24-27, 2005, University of Arizona. [Geometric Representation Theory Workshop.](#)
- January 5-8, 2005, Atlanta, GA. [AMS-MAA joint meeting.](#)
- November 13, 2004, San Jose State University, ([Southern California Matrix Meeting](#))
[Borel orbits and invariants of classical symmetric subgroups on multiplicity-free complete flag manifolds.](#)

- September 24, 2004, Auburn University
Representations and invariants behind some decompositions (II).
- September 17, 2004, Auburn University
Representations and invariants behind some decompositions (I).
- Spring 2004, Yale University. [Some seminar talks.](#)
- March 8, 2004, Auburn University
Borel orbits and invariants of classical symmetric subgroups on multiplicity-free flag manifolds.
- February 2004, Yale University
Borel orbits and invariants of classical symmetric subgroups on Grassmannians.
- May 2001, Yale University
Combined hyperbolic plane decompositions of isometry groups.

Teaching History

Year	Semester	Institute	Course Title	Course No.
2008	Fall	Auburn	Linear Differential Equations	Math 2650-081
2008	Fall	Auburn	Calculus II	Math 1620-101
2008	Summer	Auburn	Business Calculus II	Math 1690-181
2008	Spring	Auburn	Graduate Algebra II	Math 7320-101
2008	Spring	Auburn	Linear Algebra	Math 2660-122
2007	Fall	Auburn	Abstract Algebra II	Math 5320-001
2007	Fall	Auburn	Calculus III	Math 2630-111
2007	Summer	Auburn	Calculus II	Math 1620-091
2007	Spring	Auburn	Abstract Algebra II	Math 5320-001
2007	Spring	Auburn	Calculus II	Math 1620-092
2006	Fall	Auburn	Abstract Algebra I	Math 5310-001
2006	Fall	Auburn	Calculus I	Math 1610-142
2006	Summer	Auburn	Linear Algebra	Math 2660-231
2006	Spring	Auburn	Calculus II	Math 1620-121
2006	Spring	Auburn	Linear Algebra	Math 2660-116
2005	Fall	Auburn	Calculus I	Math 1610-126
2005	Fall	Auburn	Linear Algebra	Math 2660-111
2005	Spring	Auburn	Linear Algebra	Math 2660-111
2005	Spring	Auburn	Linear Algebra	Math 2660-081
2004	Fall	Auburn	Linear Algebra	Math 2660-116
2004	Fall	Auburn	Linear Algebra	Math 2660-096
2003	Fall	Yale	Multivariable Calculus	Math 120
2003	Spring	Yale	Tutor Math 112, Math 115, and Math 120	

Grant Activities

- Joint proposal for 2008 NSF grant in GK-12 education for curriculum-linked student research in biology, mathematics, and statistics with an alliance among Auburn,

Tuskegee, and Alabama State Universities involving students and teachers from 14 high schools in East-Central Alabama.

- Joint proposal for 2007 NSF grant in DMS-Algebra, Number Theory, and Combinatorics, title “Asymptotic behaviors of matrix and Lie group decompositions”.
- Proposal for 2007 NSF grant in DMS-Algebra, Number Theory, and Combinatorics, title “On simultaneous isometry of subspaces”.
- Proposal for 2005 NSF grant in DMS-Algebra, Number Theory, and Combinatorics, title “Finite parabolic subgroup orbits of symmetric subgroups on flag varieties”.
- Joint proposal for 2005 Dean’s Research Initiative, title “Developing benchmark test for matrix computation components of 3Ms”.
- Joint proposal for 2005 Auburn University Faculty Mentoring Program, title “Developing benchmark test for matrix computation components of 3Ms”.
- Joint proposal for 2004 Auburn University Faculty Mentoring Program, title “Analysis of QR and QLP iterations”.

Other Academic and Outreach Services

- Referee of the journal “Linear and Multilinear Algebra”.
- Referee of the journal “Linear Algebra and Its Applications”.
- Chair of the Graduate Algebra Preliminary Examination Committee, 2008.
- Member of Ph.D. Advisory Committee for Xuhua Liu, Ph.D. Candidate in Mathematics (advisor: Tin-Yau Tam), 2008-present.
- Member of Ph.D. Committee for Jason Ervin (advisor: Randall Homles), 2006-2007.
- Member of Graduate Advisory Committee of Ruchika Sabharwal, M.A.M. Candidate in Mathematics (advisor: Narendra Govil), 2007-present.
- Member of Graduate Advisory Committee of Neha Agarwal, M.A.M. Candidate in Mathematics (advisor: Narendra Govil), 2006-2007.
- Assistant chair of the organizing committee of the joint meeting of 85th MAA (Mathematical Association of America) Meeting (Southeastern Section) and 30th SIAM (Society for Industrial and Applied Mathematics) Annual Meeting (Southeastern Atlantic Section), April 2005 - April 2006.
- Participate in GK-12 Fellow Presentation, June 2008.
- Help organize Science Olympiad events at Auburn University, from 2005 to 2008.