

# Curriculum Vitae: Apoorva Khare

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University of California at Riverside  
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## Personal Information

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Citizenship Indian

## Employment

2006 – **University of California at Riverside**, Riverside, CA  
Visiting Assistant Professor in Mathematics

## Education

2000 – 2006 **University of Chicago**, Chicago, IL  
Ph.D. in Mathematics, June 2006  
(Thesis Advisor: Professor Victor Ginzburg)  
M.S. in Mathematics, December 2001  
Topic Exam passed in Spring 2002, on *Semisimple Lie algebras and their representations*

1997 – 2000 **Indian Statistical Institute**, Kolkata, India  
B.Stat. (Hons.), June 2000: Graduated First Class with Distinction

1995 – 1997 **B.J.B. College**, Bhubaneswar, India  
June 1997 Fifth in the state in the CHSE (+2 Science) State Board Examination

1985 – 1995 **Demonstration Multipurpose School**, Bhubaneswar, India  
Given the Best Student Award in 1990, 1993, 1995

## Teaching Experience

2007 – 2008 **Visiting Assistant Professor** in Mathematics, University of California at Riverside  
Mathematics 8B: Introduction to College Mathematics for Science  
Mathematics 10B: Calculus: Several Variables  
Mathematics 9C (2 Sections): First Year Calculus

2006 – 2007 **Visiting Assistant Professor** in Mathematics, University of California at Riverside  
Mathematics 9B: First Year Calculus  
Mathematics 46: Ordinary Differential Equations  
Mathematics 8B: Introduction to College Mathematics for Science  
Mathematics 23: Applied Matrix Algebra  
Mathematics 9C: First Year Calculus  
Mathematics 10A: Calculus: Several Variables

## Teaching Experience (continued)

2005 – 2006	<b>Lecturer</b> in Mathematics, University of Chicago Mathematics 153: Calculus - III Mathematics 195, 196: Math. Methods for the Social Sciences - I,II
2004 – 2005	<b>Lecturer</b> in Mathematics, University of Chicago Mathematics 151, 152: Calculus - I, II Mathematics 195: Mathematical Methods for the Social Sciences - I
2003 – 2004	<b>Lecturer</b> in Mathematics, University of Chicago Mathematics 151, 152, 153: Calculus - I, II, III
2002 – 2003	<b>Lecturer</b> in Mathematics, University of Chicago Mathematics 151, 152, 153: Calculus - I, II, III
2001 – 2002	<b>College Fellow</b> in Mathematics, University of Chicago Math. 175: Elementary Number Theory, Mentor: R. Narasimhan Math. 203: Analysis in $\mathbb{R}^n$ - I, Mentor: S. Webster Math. 204: Analysis in $\mathbb{R}^n$ - II, Mentor: Y. Yuan

## Synergistic activities

2006 – 2007	Mentored graduate students at University of California, Riverside, through (but not limited to) the Lie Theory Seminar.
2005 – 2006	<b>Mentor</b> in the Directed Reading Program, Fall 2005 and Spring 2006 Mentored Philip M. Brunetti on selected topics in elementary number theory (including Mobius functions on partially ordered sets); and Gabriel Gaster on the Banach Tarski Paradox and related topics.
2001 – 2002	Helped <b>organize</b> a weekly graduate student seminar, University of Chicago.

## Programs attended

Summers of 1996, 1997	<i>Homi Bhabha Center for Science Education, Mumbai, India:</i> International Mathematical Olympiad Training Camp
Summers of 1998–2000	<i>Tata Institute of Fundamental Research, Mumbai, India:</i> Nurture Program in Mathematics
December 1999	<i>Tata Institute of Fundamental Research, Mumbai, India:</i> Visiting Students' Research Program in Mathematics

## Conferences attended

Aug 31 – Sep 4, 2003	An International Conference on “The Unity of Mathematics” (in honor of I.M. Gelfand), Harvard University
Dec 17–19, 2003	Joint AMS-India Conference, I.I.Sc., Bangalore, India
May 18–22, 2004	Conference on Infinite-Dimensional Aspects of Representation Theory and Applications, University of Virginia (Charlottesville)
May 17–21, 2005	Lie Algebras, VOAs and their applications: A conference in honor of Robert L. Wilson and James Lepowsky (on their 60th birthdays), North Carolina State University (Raleigh)
May 26–27, 2006	Algebra And Representation Theory - Graduate Student Conference, Kansas State University (Manhattan, KS)

### Conferences attended (continued)

Nov 3–4, 2006	AMS 2006 Fall Southeastern Section Meeting - Special Session on Combinatorial Representation Theory, University of Arkansas (Fayetteville)
Apr 21–22, 2007	Conference on Lie groups, Lie algebras, and their representations, University of California at Santa Barbara
May 9–11, 2007	Workshop on Representation Theory and Geometry 2007, University of California at Berkeley
Oct 5–6, 2007	AMS 2007 Fall Central Section Meeting - Special Session on Hopf Algebras and Related Areas, De Paul University (Chicago)
Jan 18–20, 2008	Symmetry in Mathematics and Physics - Professor Varadarajan's 70th birthday conference, UCLA (Los Angeles)
Mar 10–14, 2008	Workshop on Lie Theory, Mathematical Sciences Research Institute (MSRI) at Berkeley
Mar 28–30, 2008	AMS 2008 Spring Southeastern Section Meeting - Special Session on Geometric and Combinatorial Representation Theory, Louisiana State University (Baton Rouge)
May 3–4, 2008	AMS 2008 Spring Western Section Meeting - Special Session on Hopf Algebras and Quantum Groups Claremont McKenna College
Jun 16–Jul 4, 2008	2008 Summer School on <i>Representation theory of quivers</i> , Institut Fourier, Grenoble
Jul 7–11, 2008	International Conference on vertex operator algebras and related areas (in honor of Geoffrey Mason's 60th birthday), Illinois State University, Normal

### Invited Lectures

Dec 20, 2004	Tata Institute of Fundamental Research (India)
May 19, 2005	North Carolina State University: I talked at the conference on "Lie Algebras, VOAs and their applications"
May 27, 2006	Kansas State University: I talked at the Graduate Student Conference on "Algebra And Representation Theory"
Nov 4, 2006	University of Arkansas at Fayetteville: I talked at the "Special Session on Combinatorial Representation Theory" in the AMS 2006 Fall Southeastern Section Meeting
May 9, 2007	University of California at Berkeley: I talked at the "Workshop on Representation Theory and Geometry 2007"
Dec 18,20, 2007	National Institute of Science Education and Research, and Institute of Mathematics and Applications (India)
Mar 29, 2008	Louisiana State University at Baton Rouge: I talked at the "Special Session on Geometric and Combinatorial Representation Theory" in the AMS 2008 Spring Southeastern Section Meeting
May 3, 2008	Claremont McKenna College: I talked at the "Special Session on Hopf Algebras and Quantum Groups" in the AMS 2008 Spring Western Section Meeting
Jul 2, 2008	Institut Fourier at Grenoble: I talked in the "Junior Seminar" at the 2008 Summer School

### Invited Lectures (continued)

Jul 21, 2008	De Paul University
Aug 29, 2008	Cornell University
Sep 03, 2008	Yale University
Sep 04, 2008	Rutgers University

### Seminar Talks

May 26, 2004	Robert Kottwitz's student seminar, University of Chicago
Nov 19 and Dec 3, 2004	Victor Ginzburg's student seminar, University of Chicago
Oct 12 and 17, 2006	Lie Theory Seminar, University of California at Riverside
March 15, 2007	Lie Theory Seminar, University of California at Riverside
May 22, 2007	Lie Theory Seminar, University of California at Riverside
October 30, 2007	Lie Theory Seminar, University of California at Riverside
April 4, 2008	Commutative Algebra Seminar, University of California at Riverside

### Awards and Scholarships

1995-1997	National Talent Search (NTSE) Scholarship, from the NCERT, India
1995, 1996	Secured the first rank in the Regional Mathematics Olympiads (Received cash awards, from the Orissa Mathematical Society)
1996	Indian National Mathematical Olympiad (INMO) Scholarship
1997-2000	Student Fellowship, from the Indian Statistical Institute, Kolkata
1998	Cash award, from the Indian Statistical Institute, Kolkata, for academic excellence
1998-1999	Cash awards, from the National Board of Higher Mathematics, India
2000-2002	McCormick Fellowship, from the University of Chicago

### Miscellaneous

Summer 1997	Selected (ranked in 900-1000) in the IIT JEE '97
February 1994	Attended the first SAARC Children's Friendship Camp in Delhi

### Extracurricular

1997	Passed the Sangeet Visharad Purna (6th Year) in Hindustani Vocal (north Indian classical music) in the First Division, from the Gandharva Mahavidyalaya, Mumbai
November 5, 2005	Sang on the Diwali show of the Indian Channel, Lotus Beat, of WNUR, the radio of Northwestern University. Raag Shyam Kalyan can be found at <a href="http://www.math.ucr.edu/~apoorva/personal/ShyamKalyan.mp3">http://www.math.ucr.edu/~apoorva/personal/ShyamKalyan.mp3</a>
Winter 2006	Sang with the student group <i>Sapthak</i> for the background vocals, of the Student Movie shot by Kara Schoonmaker, in the University of Chicago
Passion	Singing - Hindustani classical, and old Hindi film songs - is my passion. I have performed (Hindustani Classical) in various concerts in the University of Chicago, apart from singing in numerous house concerts and cultural shows.

Other interests                      Reading books, playing the harmonium, table tennis, and following sports.

### Publications and Preprints

- 1997                      *Divisibility tests*, Furman University Electronic Journal of Undergraduate Mathematics, Vol. **3**, Pages 1–5.
- 2005                      *Category  $\mathcal{O}$  over a deformation of the symplectic oscillator algebra*, Journal of Pure and Applied Algebra **195** No. 2 (2005), 131-166; [math.RT/0309251 v3](#).
- 2006                      *Category  $\mathcal{O}$  over the symplectic oscillator algebra*, Ph. D. Thesis, University of Chicago, June 2006.
- 2007                      *Quantized symplectic oscillator algebras of rank one*, joint with Wee Liang Gan; Journal of Algebra **310** No. 2 (2007), 671–707; [math.RT/0405176 v3](#).
- 2007                      *Divisibility tests and recurring decimals in Euclidean domains*, JP Journal of Algebra, Number Theory, and Applications (JPANTA) **7** No. 1 (2007), 1–32; [math.NT/0406025 v3](#).
- Preprint, 2005                      *Axiomatic framework for the BGG Category  $\mathcal{O}$* , [math.RT/0502227 v4](#), submitted.
- Accepted                      *Functoriality of the BGG Category  $\mathcal{O}$* , accepted for publication in *Communications in Algebra*; preprint under revision at <http://math.ucr.edu/~apoorva/job/skewcopy.pdf>.
- To appear                      *The BGG Category  $\mathcal{O}$* , to appear in the Encyclopedia of Mathematics (Michiel Hazewinkel, Ed.), Kluwer Academic Publishers.
- Preprint, 2007                      *The sum of a finite group of weights of a Hopf algebra*, [math.RA/0701467](#).
- Preprint, 2007                      *Drinfeld-Hecke algebras over cocommutative algebras*, [arxiv:0705.2067](#).
- Preprint, 2008                      *Vector spaces, modules over Chinese rings, and monoids as unions of proper subobjects*, [arxiv:0803.2746](#).
- Accepted                      *Center and representations of infinitesimal Hecke algebras of  $\mathfrak{sl}_2$* , joint with Akaki Tikaradze; accepted for publication in *Communications in Algebra*; <http://arxiv.org/abs/0807.4776>.