

# Momar Dieng

Department of Mathematics  
The University of Arizona  
617 N. Santa Rita Avenue  
P.O. Box 210089  
Tucson, AZ 85721-0089  
Tel: (520) 621-6892  
Fax: (520) 621-8322

<http://www.math.arizona.edu/~momar>  
momar@math.arizona.edu

- EDUCATION
- ◇ **University of California**, Davis, CA.  
Ph.D. in Mathematics, June 2005 .
  - ◇ **University of California**, Davis, CA.  
M.A. in Mathematics, June 2001.
  - ◇ **Macalester College**, St. Paul, MN.  
B.A. in Mathematics and Physics with Honors, May 2000.
- RESEARCH
- ◇ Current research in the area of Mathematical Physics, in particular integrable systems theory and random matrix theory.
  - ◇ Publications:
    - *Distribution Functions for Edge Eigenvalues in Orthogonal and Symplectic Ensembles: Painlevé Representations II*. ArXiv:math.PR/0506586 (extended thesis version with MATLAB<sup>tm</sup> code)
    - *Distribution Functions for Edge Eigenvalues in Orthogonal and Symplectic Ensembles: Painlevé Representations*, ArXiv:math.PR/0411421 (accepted for publication in the International Mathematics Research Notices).
    - *Character Formulas for q-Rook Monoid Algebras*, with Thomas Halverson and Vahe Poladian in *Journal of Algebraic Combinatorics*, **17(2):99–123**, 2003.
    - *Differential and Complex Geometry of Two-Dimensional Noncommutative Tori*, with Albert Schwarz in *Letters in Mathematical Physics*, **61:263–270**, 2002.
- SKILLS
- ◇ Computing
    - Unix, Linux, Windows and Macintosh
    - Programming in C, C++, Java, Mathematica, Maple, Matlab, LabView. Extensive HTML/Javascript/Web design experience with Macromedia and Adobe products. Experience with Microsoft Office, AutoCAD, MathCAD.
  - ◇ Languages
    - Native speaker of French and Wolof. Fluent in English, Italian, and German. Familiarity with Arabic.
- WORK EXPERIENCE
- ◇ **Postdoctoral Fellow/Visiting Faculty** (Fall 2005–Present)  
The University of Arizona
  - ◇ **Communication Assistant** (Spring 2004–Fall 2005)  
University of California, Davis
    - Spearheaded a project to facilitate access to scientific materials in print for visually-disabled student (under the supervision of Professor Richard Walters, U.C. Davis Computer Science); helped develop an improved version of an existing OCR software program specifically geared for that task.
  - ◇ **Associate Instructor** (Summer 2001–Spring 2005)  
University of California, Davis

# Momar Dieng

- Independently designed and taught various Calculus courses, Differential Equations, and Linear Algebra during regular and summer sessions.
- ◇ **Teaching Assistant** (Summer 2000–Spring 2005)  
University of California, Davis
  - Held discussion sessions, and assisted other instructors in the teaching and grading of various courses offered by the Mathematics department, both at the graduate and undergraduate level.
- ◇ **McNair Scholars Program Graduate Advisor** (2002)  
University of California, Davis
  - Served as counsellor and academic advisor for talented underrepresented undergraduate students at the University of California as a part of the selective McNair Scholars Program. Assisted students in preparing and applying for graduate programs.
- ◇ **Los Alamos Summer Student** (Summer 2000)  
Los Alamos National Laboratory, Los Alamos, NM  
University of New Mexico, Los Alamos, NM
  - Analyzed scattering data in order to quantitatively and qualitatively evaluate detonation experiments.
  - Attended lectures on various topics of physics applied to nuclear weapons research by experts at Los Alamos.
- ◇ **Research Assistant** (Summer 1999)  
Physics Department, Colorado College, Colorado Springs  
Physics Department, Macalester College, St. Paul, MN
  - Analyzed data from the MACRO experiment in Gran Sasso, Italy.
  - Participated in the set up of a balloon experiment to measure neutrino showers through the atmosphere.
- ◇ **Keck Fellow** (Summer 1999)  
Physics Department, Macalester College, St. Paul, MN
  - Constructed a computer model for the generation of Terahertz pulses at semiconductor surfaces. These pulses have wide uses in research, both in industry and academia, such as the monitoring of chemical reactions.
- ◇ **NSF/REUI Fellow** (Summer 1999)  
Institute for Advanced Study, Princeton, NJ  
Mathematics Department, Macalester College, St Paul, MN
  - Developed a Character Theory of the Iwahori-Solomon Algebra, as part of Mathematics Honors Thesis under the direction of Prof. Thomas Halverson; results published in the Journal of Algebraic Combinatorics.
- ◇ **Undergraduate Research Fellow** (Summer 1998)  
Canadian Institute for Theoretical Astrophysics, Toronto, ON
  - Constructed a computer model of galaxy interaction to be used in investigating the formation of spiral arms in galaxies.
  - Gained a solid background in C/C++ programming, and computational methods to model and analyze physical problems.
- ◇ **Research Assistant** (Spring 1998–Summer 1999)  
Physics Department, Macalester College, St. Paul, MN
  - Reduced and analyzed data from the Hubble Space Telescope; calculated the terminal wind velocity of O and B and A supergiant stars in the Large and Small Magellanic Clouds.
- ◇ **Electronics Design Engineering Assistant** (Summer 1997)  
TLC Precision Wafer Technology Inc., Minneapolis, MN

# Momar Dieng

- Assisted in the computer-aided design and manufacturing of MMIC chips (Monolithic Microwave Integrated Devices) utilized in telecommunication systems (e.g. cellular phone networks, Air Force missile tracking technology and NASA satellite tracking devices).
- Automated the testing of newly produced MMIC devices with the instrumentation software Labview.

## ◇ Additional experience

- Teaching Assistant, Physics Department, Macalester College (1996-1998).
- Tutor, French Department, Macalester College (1998-2000).

## HONORS

Alice Leung Prize for Excellence in Research, U.C. Davis (2004)  
U.C. Chancellor's Award for Community and Diversity, U.C. Davis (2004)  
Joe Konhauser Prize, Macalester College Mathematics Department (2000)  
Hastings Book Award, Macalester College Physics Department (2000)  
Organizational Growth Award (President, *Afrika!*), Macalester College (2000)  
Pi Mu Epsilon National Honorary Mathematics Society (1998)

## TALKS

*Distribution functions for edge eigenvalues in orthogonal and symplectic ensembles: Painlevé representations*  
Invited Speaker, AMS Western Section Meeting, Albuquerque NM, October 2004  
*The next largest eigenvalue in gaussian ensembles*  
Mathematical Physics Seminar, U.C. Davis, October 2004  
*An introduction to random matrices via the GUE*  
Graduate Student Seminar, U.C. Davis, May 2004  
*Matrix integrals and map enumeration: a gentle introduction*  
Graduate Student Seminar, U.C. Davis, May 2003  
*Generating the Symmetric Group*  
Graduate Student Seminar, U.C. Davis, May 2002  
*Braids, representations, and all that*  
Graduate Student Seminar, U.C. Davis, March 2001  
*Characters of the Rook Monoid and the Iwahori-Solomon algebra*  
Combinatorics Seminar, U. of Minnesota, December 1999

## CONFERENCES AND

*Recent Perspectives in Random Matrix Theory and Number Theory* (March 2004)  
Newton Institute, Cambridge, UK

## WORKSHOPS

*International Congress of Mathematical Physics (ICMP)*  
*ICMP Young Researcher's Symposium* (Summer 2003)  
Instituto Superior Técnico, Lisbon, Portugal  
*Recent Progress in Random Matrix Theory and Its Applications* (September 2002)  
MSRI, Berkeley, California  
*Random Matrix Theory and Combinatorics Conference* (July 2002)  
Courant Institute, New York, NY  
*European Summer School on Asymptotic Combinatorics with Applications to Mathematical Physics/NATO Advanced Study Institute* (Summer 2001)  
Steklov Institute, St. Petersburg, Russia

## MEMBERSHIPS AND OFFICES

BGPA co-chair, U.C. Davis (Since 2004)  
Galois Group President, U.C. Davis (2002–2004)  
*Afrika!* President, Macalester College (1999–2000)  
American Mathematical Society (Member since 2000)  
Mathematical Association of America (Member since 1996)