

## CURRICULUM VITAE of Charles N. Moore

**Address:** Department of Mathematics  
Kansas State University  
Manhattan, KS 66506-2602, USA.  
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**Professional Preparation:** Ph.D., University of California, Los Angeles, 1986

### Experience:

1986 - 1990, Visiting Assistant Professor, Washington University, National Science Foundation Postdoctoral Fellow in Mathematics  
1990 - present, Assistant Professor, Associate Professor, Professor, Kansas State University  
1997- 1998, Visiting Professor, University College, Galway, Ireland  
2004-2005, Visiting Professor, National University of Ireland, Galway, Ireland

### Professional recognition and honors:

Phi Beta Kappa  
Magna Cum Laude  
National Science Foundation Postdoctoral Fellowship in Mathematics  
Outstanding Graduate Faculty Teaching Award, 1993  
William L. Stamey Undergraduate Teaching Award, College of Arts and Sciences, Kansas State University, 1995  
Outstanding Graduate Faculty Teaching Award, 2002  
Hopper Travel Award from the American Association of University Professors, 2006  
Outstanding Graduate Faculty Teaching Award, 2008

### Publications:

1. *The corona theorem for domains whose boundary lies in a smooth curve*, Proc. Amer. Math. Soc. 100 (1987), 266-270.
2. *An analogue for harmonic functions of Kolmogorov's law of the iterated logarithm*, with Bañuelos, R., and Klemes, I., Duke J. Math. 57 (1988), 37-68.
3. *Some results in analysis related to the law of the iterated logarithm*, with Bañuelos, R., Proceedings of the Special Year in Modern Analysis at the University of Illinois, Berkson, E., Peck, N.T. and Uhl, J., Editors, Cambridge University Press, (1989), 47-80.
4. *Sharp estimates for the non-tangential maximal function and the Lusin area function on Lipschitz domains*, with Bañuelos, R., Trans. Amer. Math. Soc. 312 (1989), 641-662.
5. *Laws of the iterated logarithm, sharp good- $\lambda$  inequalities and  $L^p$ -estimates for caloric and harmonic functions*, with Bañuelos, R., Indiana Univ. Math. J. 38 (1989), 315-344.
6. *The lower bound in the law of the iterated logarithm for harmonic functions*, with Bañuelos, R., and Klemes, I. Duke Math. J. 60 (1990), 1-27.
7. *Mean growth of Bloch functions and Makarov's law of the iterated logarithm*, with Bañuelos, R., Proc. Amer. Math. Soc. 112 (1991), 851-854.
8. *Distribution function inequalities for the density of the area integral*, with Bañuelos, R., Ann. Inst. Fourier 41 (1991), 137-171.
9. *Some inequalities for the density of the area integral*, Partial Differential Equations with minimal smoothness and applications, IMA volumes in Mathematics and its applications, Springer-Verlag, 1992, pp. 189-198.
10. *Certain lacunary cosine series are recurrent*, with Grubb, D.J., Studia Math. 108 (1) (1994), 21-23.
11. *The equivalence of two conditions for weight functions for martingales*, with Chang, X.-Q., Statistics and Probability Letters 23 (1995), 129-133.
12. *Recurrence for real lacunary series*, Interaction between Functional Analysis, Harmonic Analysis, and Probability, Lecture Notes in Pure and Applied Mathematics 175, Marcel Dekker, 1996, pp. 365-374.
13. *Estimates for the density of the area integral*, Potential Theory-ICPT 94, Walter de Gruyter & Co., Berlin-New York, 1996, 423-432.
14. *A variant of Hörmander's condition for singular integrals*, with Grubb, D.J., Colloq. Math. 73 (2) (1997), 165-172.

15. *Probabilistic behavior of harmonic functions*, with Bañuelos, R., Birkhäuser Verlag, Basel, 1999.
16. *Existence, uniqueness and regularity of the free boundary in the Hele-Shaw problem with a degenerate phase*, with Blank, I. and Korten, M., in *Harmonic Analysis, Partial Differential Equations and Related Topics*, Contemporary Mathematics series of the American Mathematical Society, volume 428, 2007, 33-42.
17. *The Hele-Shaw problem as a “Mesa” limit of Stefan problems: Existence, uniqueness, and regularity of the free boundary*, with Blank, I. and Korten, M., *Trans. Amer. Math. Soc.* 361, no. 3 (2009), 1241-1268.
18. *Regularity for the two-phase Stefan problem*, with Korten, M., *Communications in Pure and Applied Analysis* 7, no.3 (2008), 591-600.
19. *Fourier series and the  $\delta^2$  process*, with Abebe, E. and Graber, J., *The Journal of Computational and Applied Mathematics* 224, no. 1 (2009), 146-151.
20. *The Cauchy problem for the two phase Stefan problem*, with Korten, M., *Communications in Applied Analysis* 11, no.1 (2007), 43-52.
21. *Fourier series and the Lubkin  $W$ - transform*, with Bogess, J., and Bunch, E., *Numer. Algor.* 47 (2008), 133-142.
22. Editor (with E. Gavosto, M. Korten, and R. Torres) *Harmonic analysis, partial differential equations, and related topics*, AMS Contemporary Mathematics series #428, 2007.
23. *Random walks*, Ramanujan Mathematical Society Mathematics Newsletter 17, no. 3 (2007), 78-84.
24. *Uniqueness for solutions of the two-phase Stefan problem with signed measures as data*, with Korten, M., submitted
25. *Acceleration of Fourier series*, submitted

#### Other publications:

Contributor, *Comprehensive Dictionary of Mathematics*, CRC Press, Boca Raton, Florida, 2001. Wrote over 150 definitions of mathematics terminology comprising over 35 pages of text.

Reviewer, *Mathematical Reviews*. Have written over 70 reviews of mathematics literature.

#### Invited addresses:

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| 1986 | May       | California Institute of Technology, hour colloquium  |
|      | November  | University of California, Los Angeles, hour seminar  |
| 1987 | May       | University of Illinois, Champaign-Urbana, hour colloquium  |
| 1988 | October   | Special session on potential theory on non- smooth domains, A.M.S. meeting #845, Lawrence, Kansas, 20 minute talk                        |
|      | November  | Southern Illinois University, Edwardsville, hour colloquium  |
| 1989 | January   | Kansas State University, hour colloquium   |
|      | May       | Wildcat Function Theory conference, University of Kentucky, hour lecture   |
|      | June      | Purdue University, hour colloquium   |
| 1990 | March     | Special session on harmonic analysis and probability theory, 20 minute talk A.M.S. meeting #855, Manhattan, Kansas                       |
|      | March     | Workshop on partial differential equations with minimal smoothness and applications, University of Chicago, hour lecture                 |
|      | September | International Conference on Potential Theory, Nagoya, Japan, 30 minute lecture   |
| 1991 | July      | Purdue University, hour colloquium   |
|      | August    | International Conference on Potential Theory, Amersfoort, Netherlands, 30 minute lecture   |
| 1992 | October   | Conference on Technology in the Mathematics Curriculum, Kansas City, KS, 30 minute workshop  |
| 1993 | January   | University of Missouri, Kansas City, hour colloquium   |
|      | October   | Northern Illinois University, hour colloquium  |
| 1994 | January   | University of Missouri, Kansas City  |
|      | March     | Special Session on Harmonic Analysis and Probability, A.M.S. meeting #891, Manhattan, Kansas, 20 minute talk                             |
|      | May       | McGill University, Montréal, Canada, hour colloquium   |
|      | June      | Conference on the Interaction between Functional Analysis, Harmonic Analysis, and Probability, University of Missouri, 30 minute lecture |

	August	International Conference on Potential Theory, Kouty, Czech Republic, 30 minute lecture Short communication-International Congress of Mathematicians Zürich, Switzerland, 20 minute talk
1995	February	University of Missouri, Kansas City
	March	Special Session on Probability and Harmonic Analysis, A.M.S. meeting #900, Chicago, 20 minute talk
1996	February	University of Missouri, Kansas City, hour colloquium
	June	Purdue University, hour colloquium
1997	February	University of Missouri, Kansas City, hour colloquium
	October	University College, Galway, hour colloquium
1998	January	University College, Cork, hour colloquium
	February	Trinity College–University College, Dublin joint seminar, hour colloquium
	March	University College, Galway, hour colloquium
	August	International Congress of Mathematicians, Berlin, 20 minute talk
1999	February	University of Missouri, Kansas City, hour colloquium
	March	MAA conference, Kansas State University, 20 minute talk
2000	January	University of Missouri, Kansas City, hour colloquium
	February	Emporia State University, hour colloquium
	June	Conference on Stochastic and Harmonic Analysis, Chicago, 40 minute lecture
2001	February	University of Missouri, Kansas City, hour colloquium
2002	March	University of Missouri, Kansas City, hour colloquium
	August	International Congress of Mathematicians, Beijing, 20 minute talk
2003	February	University of Missouri, Kansas City, hour colloquium
2004	February	University of Missouri, Kansas City, hour colloquium
	June	ShowMe meeting, University of Missouri, Columbia, 45 minute lecture
	October	Special Session on Differential Equations, A.M.S. meeting #1000, Albuquerque, 20 minute talk
	December	National University of Ireland, Galway, hour colloquium
2005	March	CUNY meeting on analysis and geometry, New York, hour lecture
	October	Special Session on Geometry of Differential Equations, A.M.S meeting #1011, Lincoln, 20 minute talk
	November	Emporia State University, hour colloquium
2006	February	University of Missouri, Kansas City, hour colloquium
	April	Special Session on Singular Integrals, Geometric Analysis, and Free Boundary Problems, A.M.S. meeting #1015, Miami, 20 minute talk
	August	Third International Conference on Applied Mathematics, Plovdiv, Bulgaria, 30 minute lecture
	October	Regional Workshop, University of Nebraska, Lincoln, plenary lecture (45 minutes)
2007	January	University of Missouri, Kansas City, hour colloquium
2008	February	University of Missouri, Kansas City, hour colloquium
2009	February	University of Missouri, Kansas City, hour colloquium

### Funding:

1987-1988, National Science Foundation Research Grant  
 1988-1991, National Science Foundation Postdoctoral Fellowship in Mathematics  
 1990, A.M.S. grant for travel to the International Congress of Mathematicians, Kyoto  
 1992-1994, National Science Foundation Research Grant  
 1994, A.M.S. grant for travel to the International Congress of Mathematicians, Zürich  
 1994, Kansas State University Faculty Development Award  
 1994-1997, National Science Foundation Research Grant  
 1998, A.M.S. grant for travel to the International Congress of Mathematicians, Berlin  
 2002, Kansas State University Faculty Development Award  
 2003, MSRI grant for the Prairie Analysis Seminar for 2003  
 2003, National Science Foundation grant for the Prairie Analysis seminar  
 2004, MSRI grant for the Prairie Analysis Seminar for 2004–2006  
 2004, National Science Foundation grant for the Prairie Analysis seminar 2004  
 2005, National Science Foundation grant for the Prairie Analysis seminar 2005, 2006  
 2005, Kansas State University ADVANCE Departmental Initiative award  
 2006, Kansas State University Faculty Development Award  
 2006, Kansas State University ADVANCE Departmental Initiative award

2007, National Science Foundation grant for the Prairie Analysis seminar 2007  
2008, National Science Foundation grant for the Prairie Analysis seminar 2008  
2009, National Science Foundation grant for the Prairie Analysis seminar 2009-2011

### **Teaching experience:**

Have taught all levels of Mathematics from remedial through graduate level seminars. Courses taught include remedial algebra, trigonometry, all levels of calculus, ordinary differential equations, partial differential equations, linear algebra, matrix theory, combinatorics and graph theory, mathematics for elementary school teachers, all levels of analysis including measure theory and functional analysis, harmonic analysis, and graduate seminars on  $H^p$  theory of one and several variables, Fourier analysis, wavelets, spherical harmonics, and probabilistic aspects of harmonic analysis.

### **Student advising:**

#### **Ph.D. major advisor:**

Sarah Cook, *Good-Lambda inequalities for wavelets*, Ph.D. thesis, 1998.

Donald Adongo, *A local extrapolation method for hyperbolic conservation laws: The ENO and Goodman-Leveque underlying schemes and sufficient conditions for TVD property*, Ph.D. thesis, 2008.

#### **Ph.D. committee member for:**

B. Schroeder - 1992, M. Lloyd - 1993, J. Ahn - 1993, H. Sayer - 1994, Weigang Li (McGill University) - 1994, P. Mitchell - 1995, Christopher Sesler (Economics) - 1996, Yu-Hua Wang - 1998, E. Canning - 1999, M. Mosbo - 1999, R. Alexeev - 2000, Abhijit Shevade (Chemical Engineering) - 2000, S. Kim - 2004, Shekhar Gosavi (Mechanical Engineering) - 2006, N. Randriampiry - 2006, Weidong Chen - 2007, Mahsana Ahsan (Physics) - 2008, Todd Peterson (Electrical Engineering) - 2009

#### **Master's thesis major advisor:**

Yu-Hua Wang, *The recurring idea of recurrence*, Master's thesis, 1994.

Qifeng Yu, *A modern discussion of Bachelier's Brownian motion model of stock markets*, Master's thesis, 1995.

Michele Snell, *An exposition and comparison of various integral forms*, Master's thesis, 1996.

Chris Shane, *An exploration of Hausdorff dimension*, Master's thesis, 2001.

Ben Van Dyke, *The derivative and various generalizations*, Master's thesis, 2002.

#### **Master's thesis committee member for:**

H. Amro - 1992, S. Patel - 1993, R. Dissanayake - 1993, Karen McGaughey - 1993, Scott Johnston - 1995, Liya Wu - 1997, Brad Shank - 2002, Murthy Karri - 2003, Diptansu Das (physics) - 2004, Manoj Pathak - 2004, Yuhan Jia - 2006, Ting Wang - 2006, Chris Elston - 2006, Lacey Huebel - 2007, Kyle Kincaid - 2008, Akriti Dixit - 2008, Yegor Sorokin - 2009

#### **Master's by examination:**

Have served on the examining committee of 10 students.

#### **Senior thesis advising:**

Dennis Wright, *Mathematical bases for common investment rules*, Senior thesis, 1997.

#### **Advisor, McNair Scholar project:**

Brandon Grosshardt, *Cryptanalysis: Investigating the cyclic nature of block-matrix ciphers*, 1999. Brandon was awarded a Goldwater scholarship, in part, for this work.

#### **Mentor, summer REU:**

Served as mentor to two undergraduate students for research project in Summer 2006 REU. One of these students, Jameson Graber, was awarded a Goldwater scholarship, in part, for this work.

Served as a mentor to two undergraduate students for research project in Summer 2007 REU.

### **Conferences and special sessions organized or co-organized:**

Conference on Probability and Harmonic Analysis, March 1992, Kansas State University.

Special Session on Harmonic Analysis and Probability, A.M.S. meeting #891, March 1994, Manhattan, Kansas.

Karl Stromberg Memorial Conference, February 1997, Manhattan, Kansas.  
First Prairie Analysis Seminar, October 2001, Manhattan, Kansas.  
Second Prairie Analysis Seminar, October 2002, Lawrence, Kansas.  
Third Prairie Analysis Seminar, October 2003, Manhattan, Kansas.  
Special session on differential equations, A.M.S. meeting #1000, October, 2004 Albuquerque, New Mexico  
Fourth Prairie Analysis Seminar, November 2004, Lawrence, Kansas  
Fifth Prairie Analysis Seminar, October 2005, Manhattan, Kansas  
Special session on Singular Integrals, Geometric Analysis, and Free Boundary Problems, A.M.S. meeting #1015, Miami, Florida, April 2006  
Sixth Prairie Analysis Seminar, October 2006, Lawrence, Kansas  
Seventh Prairie Analysis Seminar, November 2007, Manhattan, Kansas  
Eighth Prairie Analysis Seminar, November 2008, Lawrence, Kansas  
Ninth Prairie Analysis Seminar, October 2009, Manhattan, Kansas

### **Mathematics Department Service:**

Associate Department Head, 2000- present  
Interim Department Head, Fall 2009  
Graduate Studies director, 2005-2006  
Graduate Program Advisory Committee, 2001-present  
Personnel Advisory Committee, 1995-1996, 1996-1997, 1998-1999, 1999-2000 (Chair), 2001-2002, 2002-2003 (Chair), 2005-2006, 2008-2009  
Screening Committee, 1993-1994, 1995-1996, 1996-1997 (Chair), 1999-2000 (Chair), 2000-2001, 2001-2002 (Chair), 2002-2003 (Chair), 2005-2006, 2006-2007  
Alumni Newsletter Committee, 1991-present. This committee writes and composes the newsletter which is mailed out to all mathematics department alumni.  
Long Range Planning Committee, 1998-2003 (Chair in 2002-2003), 2003-2008  
Library Committee, 1994-present  
Qualifying Exam Committees, Fall 1991- Real Analysis, Spring 1992- Differential Equations, Spring 1994- Real Analysis, Fall 1994- Real Analysis, Spring 1995- Real Analysis, Fall 1995- Real Analysis, Spring 1996- Complex Analysis, Fall 1999- Real Analysis, Spring 2000- Real Analysis, Fall 2000- Real Analysis, Spring 2001- Real Analysis, Fall 2001- Real Analysis, Spring 2002 - Real Analysis, Fall 2002 - Real Analysis, Spring 2003 - Real Analysis, Fall 2003 - Real Analysis, Fall 2005 - Differential Equations, Spring 2006 - Analysis, Fall 2006 - Analysis, Spring 2007 - Analysis, Fall 2007 - Analysis  
Undergraduate Advisor, 1992 -present. Advise 5-10 students per semester.  
I supervise the department's actuarial science program. I devised the courses, and for years taught the courses myself, as extra courses beyond my usual teaching duties. Now there is a course instructor with whom I keep in touch to discuss curriculum and the nearly constant updates necessary to make our courses relevant for students wanting to take the Society of Actuaries examinations. I am involved with the Society of Actuaries academic liaison program, and keep current the information about our program on the Society of Actuaries web page. I advertise our courses and advise students interested in actuarial science.  
I directed the department's academic excellence workshops. This involved choosing the course instructors and monitoring the instructional materials they used. I advertised the courses among advisors throughout the university and advertised to administrators. I advised students interested in the courses. Unfortunately, it has not been feasible to run these courses in recent years.  
Since 1991 I have organized the department's weekly analysis seminar.  
I wrote and graded the analysis portion of the department's basic mathematics exam in August 1992, August 1999, February 2000, August 2000, August 2001

I have served as graduate teaching advisor for 17 students.

I have served as temporary academic advisor to dozens of graduate students

I have served as course coordinator for Differential Equations (Fall 1992, Spring 1993, Fall 1995, Spring 1996, Fall 1998, Spring 1999, Fall 2001, Spring 2002, Fall 2006, Spring 2007, Fall 2008, Spring 2009), as course coordinator for Calculus I (Spring 1997, Fall 2007), for Trigonometry (Fall 1999, Spring 2000, Fall 2009) and for Applied Matrix Theory (Spring 1992, Fall 2000, Spring 2001, Fall 2002, Spring 2003).

I developed an exit interview questionnaire for graduate students and have conducted many of these interviews. I adapted this as a questionnaire for departing faculty and postdocs, and have conducted all these interviews.

Since its inception in 1998, I have been a member of the S. Thomas Parker competition committee. This committee makes and administers the exam, and decides on the winners.

I developed a brochure to advertise our graduate program

I served as Marianne Korten's mentor. As such I advised her on her research and grant proposals. She received a KSU mentoring grant under my supervision and was successful in her research and obtaining extramural support from the NSF.

I am serving as Virginia Naibo's mentor. She has received three KSU mentoring grants with me as supervisor.

I have served as teaching mentor to three junior faculty.

### **University Service:**

*Ad hoc* committee to study evening exams- 2000

College Course and Curriculum Committee, 2001-2004 (Chair in 2003-2004)

On numerous occasions, I have been involved with giving practice interviews to Rhodes and Marshall scholarship candidates

In 1996, I gave some lectures at the Engineering and Science Summer Institute for high school students.

In the summer of 2000, I was a "mentor" in the Plains Academy Co-op Partnership- a program which brought professors from two- and four-year colleges to Kansas State to develop ways to implement technology in the classroom.

In Spring 2006 I gave a presentation at K-State's *Junior Day* and met with prospective students.

In the summers of 2007, 2008, and 2009, I developed and taught a mathematics unit in the GROW program for middle school girls.

I served on the Graduate Council, Spring 2009-present

### **Professional Service:**

Refereed one or more articles for the journals: *Proceedings of the American Mathematical Society*, *Indiana University Mathematics Journal*, *Complex Variables and Elliptic Equations*, *International Journal of Applied Mathematical Sciences*, *International Journal of Mathematics and Mathematical Sciences*, *Methods and Applications of Analysis*, *Journal of Computational and Applied Mathematics*, *Scientific Journals International*, *Journal of Inequalities in Pure and Applied Mathematics*, and *Journal of Mathematics, Statistics and Allied Fields*. I have reviewed books for Elsevier, Academic Press, and John Wiley.

I have refereed grant proposals submitted to the National Science Foundation, Kansas EPSCoR, and Louisiana EPSCoR

I served on the executive board of the university's AAUP chapter, and have three times served as a delegate from Kansas to the national convention.