

# Curriculum Vitae

## Kasso A. Okoudjou

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### Education

Ph.D. in Mathematics Georgia Institute of Technology Dissertation Advisor : Christopher Heil	August 2003
M.S. in Electrical Engineering Georgia Institute of Technology	May 2003
Maîtrise és Sciences Mathématiques Université Nationale du Bénin	September 1996

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### Research Interests

Pure and Applied Harmonic analysis including time-frequency and wavelet analysis and their applications to signal processing; nonlinear PDEs.

Analysis and differential equations on fractals.

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### Professional Experience

Professor Department of Mathematics, Tufts University	July 2020- Present
Martin Luther King Visiting Professor Department of Mathematics, M. I. T.	July 2018 – June 2020
Assistant, Associate, and Professor (Associate Chair for Undergraduate Studies 2016–2018) August 2006 –June 2020 Department of Mathematics, University of Maryland, College Park	
M. S. R. I. Research Member	April–May 2017
Humboldt Senior Fellow Technische Universität Berlin, Germany	May - August 2012

Humboldt Senior Fellow Institute of Mathematics, University of Osnabrück.	2010 - 2011
H. C. Wang Assistant Professor Department of Mathematics, Cornell University	2003 - 2006
Junior Research Fellow Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria	June 2005 - July 2005
Visiting Graduate Student Numerical Harmonic Analysis Group (NuHAG), University of Vienna, Austria	May 2001 - August 2001
Graduate Teaching Assistant School of Mathematics, Georgia Institute of Technology	1998 - 2003
Mathematics Instructor (for high school) Complexe Scolaire William Ponty de Porto-Novo, Bénin	1996 - 1998

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## Books

1. A. Bényi and K. A. Okoudjou, “Modulation Spaces: With Applications to Pseudodifferential Operators and Nonlinear Schrödinger Equations,” Applied and Numerical Harmonic Analysis, Birkhäuser, Basel, 2020.
2. S. Dos Santos, M. Maslouhi, and K. A. Okoudjou (Eds), Recent Advances in Mathematics and Technology: Proceedings of the First International Conference on Technology, Engineering, and Mathematics, Kenitra, Morocco, March 26-27, 2018, Applied and Numerical Harmonic Analysis, Birkhäuser, Basel, 2020.
3. S. D. Casey, K. A. Okoudjou, M. Robinson, and B. Sadler (Eds), Sampling: Theory and Applications, Applied and Numerical Harmonic Analysis, Birkhäuser, Basel, 2020.
4. R. Balan, J. J. Benedetto, W. Czaja, Matthew Dellatorre, and K. A. Okoudjou (Eds), “Excursions in Harmonic Analysis,” Volume V The February Fourier Talks at the Norbert Wiener Center, Applied and Numerical Harmonic Analysis, Birkhäuser/Springer, New York, 2017.
5. K. A. Okoudjou (Ed), “Finite Frame Theory: A Complete Introduction to Overcompleteness”, Proceedings of Symposia in Applied Mathematics, **73**, AMS (2016).
6. R. Balan, M. Begué, J. J. Benedetto, W. Czaja, and K. A. Okoudjou (Eds), “Excursions in Harmonic Analysis,” Volume IV The February Fourier Talks at the Norbert Wiener Center, Applied and Numerical Harmonic Analysis, Birkhäuser/Springer, New York, 2015.

7. R. Balan, M. Begué, J. J. Benedetto, W. Czaja, and K. A. Okoudjou (Eds), "Excursions in Harmonic Analysis," Volume III: The February Fourier Talks at the Norbert Wiener Center, Applied and Numerical Harmonic Analysis, Birkhäuser/Springer, New York, 2015.
8. T. Andrews, R. Balan, J. J. Benedetto, W. Czaja, and K. A. Okoudjou (Eds), "Excursions in Harmonic Analysis: The February Fourier Talks at the Norbert Wiener Center," (Volume II) Birkhäuser, 2013.
9. T. Andrews, R. Balan, J. J. Benedetto, W. Czaja, and K. A. Okoudjou (Eds), "Excursions in Harmonic Analysis: The February Fourier Talks at the Norbert Wiener Center," (Volume I) Birkhäuser, 2013.

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### Selected Publications

1. Gabor analysis in weighted amalgam spaces (with K. Gröchenig, and C. Heil), *Sampl. Theory Signal Image Process.* **1** (2002), no. 3, 225–260.
2. Embeddings of some classical Banach spaces into modulation spaces, *Proc. Amer. Math. Soc.* **132** (2004), no. 6, 1639–1647.
3. Bilinear pseudodifferential operators on modulation spaces (with A. Bényi), *J. Fourier Anal. Appl.* **10** (2004), no. 3, 301–313.
4. Weak uncertainty principles on fractals (with R. S. Strichartz), *J. Fourier Anal. Appl.* **11** (2005), no. 3, 315–331.
5. Unimodular Fourier multipliers on modulation spaces, (with A. Bényi, K. Gröchenig and L. Rogers), *J. Funct. Anal.*, **246** (2007), no. 2, 366–384.
6. An uncertainty principle for fractals, graphs and manifolds (with L. Saloff-Coste and A. Teplyaev), *Trans. Amer. Math. Soc.* **360** (2008), no. 7, 3857–3873.
7. Invertibility of the Gabor frame operator on the Wiener amalgam space, (with I. A. Krishtal), *J. Approximation Theory*, **153** (2008), no. 2, 212–224.
8. A Beurling-Helson type theorem on modulation spaces, *J. Funct. Spaces Appl.*, **7** (2009), no. 1, 33–41.
9. Local well-posedness of nonlinear dispersive equations on modulation spaces, (with A. Benyi), *Bull. Lond. Math. Soc.*, **41** (2009) no. 3, 549–558.
10. Szegő limit theorems on the Sierpiński gasket, (with L. G. Rogers and R. S. Strichartz), *J. Fourier Anal. Appl.*, **16**, (2010) no. 3, 434–447.
11. Minimization of the probabilistic p-frame potential, (with M. Ehler), *J. Statist. Plann. Inference*, **142** (2012), no. 3, 645–659.
12. Scalable frames, (with G. Kutyniok, F. Philipp, and K. E. Tuley) *Linear Algebra Appl.*, **438** (2013), 2225–2238.

13. Orthogonal polynomials on the Sierpinski gasket, (with R. S. Strichartz, and E. K. Tuley), *Constr. Approx.*, **37** (2013), no. 3, 311–340.
15. Scaling Laplacian pyramids, (with Y. Hur), *SIAM J. Matrix Anal. Appl.*, **36**(1) (2015), 348–365.
16. Measures of scalability, (with X. Chen, G. Kutyniok, F. Philipp, and R. Wang), *IEEE Trans. Inf. Theory*, **61** (2015), no. 8, 4410–4423.
17. Duality and geodesics for probabilistic frames, (with C. Wickman), *Linear Algebra Appl.*, **532** (2017), 198–221.
18. On Wilson bases in  $L^2(\mathbb{R}^d)$ , (with M. Bownik, M. S. Jakobsen, and J. Lemvig), *SIAM J. Matrix Anal. Appl.*, **49** (2017), no. 5, 3999–4023.
19. An invitation to Gabor analysis, *Notices Amer. Math. Soc.*, **66** (2019), no. 6, 808–819.
20. Extension and restriction principles for the HRT conjecture, *J. Fourier Anal. Appl.*, **25** (2019), no. 4, 1874–1901.
21. Universal optimal configurations for the  $p$ -frame potentials, (with X. Chen, V. Gonzales, E. Goodman, and S. Kang), *Adv. Comput. Math.*, **46** (2020), no. 4.
22. Probabilistic frames: An overview, (with M. Ehler), in: *Finite Frames*, Eds: P. Casazza and G. Kutyniok, *Applied and Numerical Harmonic Analysis*, 415–436, Birkhäuser, 2013.
23. K. A. Okoudjou “Preconditioning techniques in frame theory and probabilistic frames,” in “*Finite Frame Theory: A Complete Introduction to Overcompleteness*”, Ed. K. A. Okoudjou, *Proceedings of Symposia in Applied Mathematics*, **73**, 105–142, AMS (2016).
24. D. G. Bhimani, M. Grillakis, and K. A. Okoudjou, “The Hartree-Fock equations in modulation spaces,” *Comm. Partial Differential Equations* **45** (2020), no. 9, 1088–1117.

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### Mentorship/Advising

- Ph.D Students

1. Matthew Hirn, (Ph.D., 2009; J. Benedetto, Co-Advisor)
2. Clare Wickman (Ph.D., 2014)
3. Matthew Begué (Ph.D., 2016; J. Benedetto, Co-Advisor)
4. Chae Clark (Ph.D., 2016; W. Czaja, Co-Advisor)
5. Ganiou Atindéhou (Ph.D. 2018, Institut de Mathématiques et de Sciences Physiques (IMSP), Dangbo, Bénin; Yébéni Kouagou, Co-Advisor).
6. Shujie Kang (Ph.D., 2020; J. J. Benedetto, Co-Advisor)

- Postdoctoral Fellows:

1. Jens Christensen (Postdoc 2009 – 2011).
2. Xuemei Chen (Postdoc, 2012 – 2014).
3. Divyang Bhimani (Postdoc, March 2018 – February 2019).

- Others:

1. José Luis Romero (visiting graduate student with a Fulbright Fellowship, Spring 2011).
2. Anirudha Poria (visiting graduate student with a Fulbright Fellowship, August 2016–May 2017, R. V. Balan, Co-Mentor).

### Professional Services

- Associate editor for the Journal of Pseudo-Differential Operators and Applications.
- Associate editor for the Journal of Function Spaces.
- Associate editor for Complex Analysis and Operator Theory.
- Associate editor for Annals of Functional Analysis.

### Membership in Professional Societies

- American Mathematical Society (AMS). Member of the Executive Committee of the Council, March 1, 2020–February 28, 2024, Member at Large of the Council, February 1, 2019 – January 31, 2022; AMS Committee on Science Policy, February 1, 2019 – January 31, 2022; Member of The Notices Chief Editor Search Committee, February 1, 2020 – January 31, 2022.
- Mathematical Association of America (MAA). Member of of the Council on Prizes and Awards January 1, 2020 – January 31, 2023.
- National Association of Mathematics (NAM).
- Society for Industrial and Applied Mathematics (SIAM).

### Honors and Awards

National Science Foundation grant 1814253: ‘Two conjectures on finite Gabor systems,’ \$222,100 8/15/2018–8/14/2021, PI.

Army Research Office grant W911NF1910366: ‘Fractals, Lyapunov Exponents and Spectral Theory of Almost Mathieu Operator (AMO) of Jacobi Type’, \$360,000, 7/1/2019–6/30/2020, PI.

Association of Public and Land-grant Universities/ National Science Foundation SEMINAL grant: “Redesigning MATH 115”, \$93,300, 2/1/2018–6/30/2020, PI.

Simons Foundation Collaboration Grant for Mathematicians: ‘Topics in harmonic analysis’, 9/1/2014 - 8/31/2019.

National Science Foundation grant 1359307: ‘REU Site: Mathematics, Applied Mathematics, and Statistics Research Experience for Undergraduates (MAPS-REU),’ 3/15/2014 - 3/15/2017, PI.

Merrin Fund for Faculty Excellence, School of Arts and Sciences, Tufts University, 2020–2021.

Humboldt Research Fellowship for Experienced Researchers, 2010–2012.

CMPS Dean’s Award for Excellence in Teaching for 2009, CMPS, University of Maryland.

2008 Celebrating Excellence Outstanding Mentor Award, CMPS, University of Maryland.

Erwin Schrödinger Junior Fellowship.

Junior Faculty Teaching Award, Department of Mathematics, Cornell University, 2004.

Georgia Tech Sigma Xi Best Ph.D. Thesis Award (one of five institute awards for 2003)