

Kennedy Obinna Idu

Curriculum Vitae

Department of Mathematics,
University of Toronto,
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EMPLOYMENT

- 2022 - **Postdoctoral Fellow**, *University of Toronto*, Canada (Supervisors: Almut Burchard, Robert L. Jerrard)
- 2021-2022 **Postdoctoral Fellow**, *The Fields Institute for Research in Mathematical Sciences*, Toronto (Supervisors: Almut Burchard, Robert L. Jerrard)

EDUCATION

- 2017-2021 **PhD in Mathematics**, *Universita di Pisa*, Italy
Thesis: Higher Order Rectifiability Criteria and a Model for Soap Films
Advisor: Giovanni Alberti
- 2016-2017 **Dip. in Mathematics**, *International Center for Theoretical Physics (ICTP)*, Trieste
Thesis: Toric Varieties
Advisor: Lothar Goettsche
- 2015-2016 **MSc. in Mathematics**, *African University of Science and Technology (AUST)*, Abuja
Thesis: On J-fixed Points of J-Pseudocontractions with Applications
Advisor: Charles E. Chidume
- 2007-2012 **BTech. in Mathematics & Comp. Sci.**, *Federal university of technology*, Owerri
Thesis: Topology and Networks
Supervisor: Kevin E. Osondu

WORK EXPERIENCE

Teaching experience

- MAT235 **Instructor**, *University of Toronto*, Toronto, Canada
2022/2023, Teaching full year multivariable calculus course for second year students.
2023/2024
- Analisi **Graduate Teaching Assistant**, *University di Pisa*, Pisa, Italy
matematica Tutorials for second year analysis course (equiv. calculus III) for students of energy engineering
II 2018/2019 and chemical engineering, university of Pisa.
- Mathematical **Grader**, *Federal University of Technology*, Owerri
methods I Graded examination for the course MTH 201:Mathematical Methods I (Equiv. Calculus I & II)
2012/2013

Mentorship

- Undergraduate **NSERC Undergraduate Summer Research, 2023**, *University of Toronto*
research Worked with Charles Griffin, undergraduate in NSERC project supervised by Robert L. Jerrard

Others

- 2014-2016 **Workshop Organiser**, *at several institutions*
Carried out software LaTeX and Matlab training Workshops at the following
○ Staff departments of mathematics and statistics, Imo state university.
○ Staff and students department of mathematics, university of Lagos.
○ Staff department of mathematics, federal college of education, Akoka.
- July-Dec. **Computer Instructor & Analyst**, *Alliance Francaise Owerri*, Imo
2014 Taught classes in computer science, microsoft office software and web design

- 2013 - 2014 **Computer Instructor & Systems Engineer**, *Owan-East Skills Acquisition centre*, Afuze
 ○ Taught classes in computer science and engineering and carried out general systems maintenance and installation works at number of schools'/institutions' computer labs.

RESEARCH

My research is in the areas of geometric measure theory, calculus of variations, partial differential equations and nonlinear operator theory with applications to convex optimization and solutions of Hammerstein integral equations.

Publications and preprints

- 1 **Charles Griffin, Kennedy Obinna Idu, and Robert L. Jerrard**, *Alexandrov's estimate revisited*, arXiv:2310.20612, 2023
- 2 **Giacomo Del Nin and Kennedy Obinna Idu**, *Geometric criteria for $C^{1,\alpha}$ rectifiability*, J. Lond. Math. Soc., 105(1), 2022
- 3 **K.O. Idu, V. Magnani, and F.P. Maiale**, *Characterizations of k -rectifiability in homogenous groups*, Journal of Mathematical Analysis and Applications, 500(2), 2021
- 4 **K.O. Idu and F.P. Maiale**, *$C^{1,\alpha}$ -rectifiability in low codimension in Heisenberg groups*, arXiv:2102.05165, 2021 (Accepted: Anal. Geom. Metr. Spaces)
- 5 **Chidume, C., Uba, M., Uzochukwu, M., Otubo, E., & Idu, K.O.**, *A Strong Convergence Theorem for an Iterative Method for Finding Zeros of Maximal Monotone Maps with Applications to Convex Minimization and Variational Inequality Problems*, Proceedings of the Edinburgh Mathematical Society, Vol. 62, no. 1, 2019
- 6 **C.E. Chidume and K.O. Idu**, *Approximation of zeros of bounded maximal monotone maps, solutions of Hammerstein integral equations and convex minimization problems*, Fixed Point Theory and App., Vol. 97, 2016

HONORS, AWARDS AND FELLOWSHIPS

- 2023 The Frederick V. Atkinson Teaching Award, Univ. of Toronto, Dept. of Math.
 2021-22 Fields-AIMS-Perimeter Postdoctoral Fellowship
 2017-2021 PhD Scholarship, Universita di Pisa
 2017 INdAM-DP-COFUND-2015 Doctoral Fellowship (*Declined*)
 2016 ICTP Postgraduate Diploma Program Scholarship
 2016 (Joint)-Best Graduating Student in Pure and Applied Mathematics, AUST, Abuja
 2015 Nelson Mandela Institute (NMI) graduate scholarship at AUST, Abuja.
 2010 MTN-Nigeria Foundation Undergraduate Scholarship.
 2008 Addax Petroleum Nigeria Limited Undergraduate Scholarship

INVITED TALKS/SEMINARS

- Dec., 2023 **Special session on Geometry in calculus of variations and PDEs**, 2023 CMS Winter Meeting, Dec. 1-4, 2023, Montreal
- 7 Oct., 2023 **Special Session on Harmonic Analysis in the Midwest**, 2023 Fall Central AMS Sectional Meeting, Omaha, Nebraska
- 2 Dec., 2022 **Variational Analysis: Applications and Theory section**, 2022 CMS Winter Meeting, Toronto, ON
- 4 June, 2022 **Harmonic Analysis & PDEs section**, 2022 CMS Summer Meeting, St John's, NL
- 5 Nov., 2021 **Postdoc Colloquium**, Fields Institute

24 Sept., **Analysis and Applied Math Seminar**, *University of Toronto*
2021

24 June, **Seminari M.A.P**, *Dipartimento di Matematica, Universita di Pisa*
2021

WORKSHOPS/CONFERENCES/SCHOOLS

1. 2023 CMS Winter Meeting, Dec. 1-4, 2023, Montreal, Canada
2. 2023 Fall Central Sectional Meeting, 7-8 October, 2023, Creighton University, Omaha, NE.
3. 2022 CMS Winter Meeting, December 2-5, 2022, Toronto, Ontario, Canada.
4. Workshop: Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions, Nov. 28 - Dec. 2, 2022, ICERM, Providence, RI (Virtual participant).
5. 2022 CMS Summer Meeting, June 3-6, 2022, St John's, Newfoundland, Canada.
6. Workshop on Nonlinear Operator Theory, Convex optimization and Partial Differential Equations, March 2-4, 2022, ONLINE (**Co-organizer**)
7. XXX Convegno nazionale di calcolo delle variazioni, February 03-07, 2020, Levico Terme.
8. AMS Fall Central Sectional Meeting, Sept. 14-15, 2019, University of Wisconsin-Madison, Madison
9. CIME School "Geometric Measure Theory & Applications" - Cetraro, September 2-6, 2019
10. 11th School on Analysis and Geometry in Metric Spaces, June 24-28, 2019, CIRM Levico Terme.
11. Some Topics Of Geometric Analysis And Geometric Measure Theory, 16th-17th April, 2019, CRM Ennio De Giorgi, Pisa.
12. Alessio Figalli, Fields Medalist 2018, 14th-17th Jan., 2019, CRM Ennio De Giorgi, Pisa
13. Optimal transportation and Applications, 12th-16th Nov., 2018, CRM Ennio De Giorgi, Pisa
14. Geometric Methods On Singular Spaces Versus Microlocal Analysis, 1st-4th Nov., 2018, CRM Ennio De Giorgi, Pisa
15. Workshop MAR: Metric Analysis And Regularity, 24th-28th September 2018, Catania
16. A Sub-Riemannian Day In Padova, September 14, 2018, Padova
17. Workshop "Geometric Measure Theory in Verona", 11th-15th June, 2018, Verona.
18. New Method in Finsler Geometry, 21st-25th May, 2018, CRM Ennio De Giorgi, Pisa
19. Celebrating the 25th anniversary of "Calculus of Variations and Partial Differential Equations", 18th May, 2018, CRM Ennio De Giorgi, Pisa

KEY SKILLS

Computer skills

Languages: Matlab, C++, Mathematica

Design: HTML, CSS, TeX, Photoshop

Technical: Systems administrator and analyst, repairs technician, Network administrator.

Foreign Languages

Italian Intermediate

From classes and about five years stay in Italy.

French Beginner

PROFESSIONAL AND COMMUNITY SERVICE

Reviewer AMS Mathscinet

Teaching Volunteer math and computer science instructor at high schools in Nigeria and Italy

Consultancy Sub-committee leader of educators for establishment of a high school in Canada

Speaker Invited to give math talks at the following social events

- International Center for Theoretical Physics (ICTP), Trieste: Students outreach programs, 2017 (see e.g., <https://youtu.be/-a2edqnzsg?t=3578>).
- Society of Petroleum Engineers (SPE), AUST chapter, Students outreach, 2016

- Member
- Mathematical societies: Canadian Mathematical Society (CMS), American Mathematical Society (AMS), European Mathematical Society (EMS)
 - Equity, Diversity and Inclusion (EDI) committee, Dept. of Math, Univ. of Toronto
- Organization
- **Co-organiser:** Analysis and applied math seminar, Dept. of Math, Univ. of Toronto
 - **Co-organiser:** Workshop on Nonlinear Operator Theory, Convex optimization and Partial Differential Equations, March 2-4, 2022, Virtual.