CURRICULUM VITA OF SHIFERAW BERHANU

EDUCATION

(1) B.Sc. with a major in Mathematics from Addis Ababa University, Ethiopia;
(2) Ph.D. in Mathematics from Rutgers University, 1987.

POSITIONS HELD

(1) 1987-1991, Assistant Professor at Temple University;
(2) 1991-1997, Tenured Associate Professor at Temple University;
(3) 1997 - June, 2021, Professor at Temple University;
(4) 1998 - August, 2003, Co-Chair of the Graduate Program in Mathematics;
(5) 2002-2003, Appointed as a Visiting Fellow in the Mathematics Department of Princeton University.
(6) August, 2003- May, 2004 Graduate Program Chair.
(7) July, 2014 - May, 2017, Graduate Program Chair.
(8) August, 2022 - , Professor at the University of Maryland

PUBLICATIONS

[1] S. Berhanu, W.W. Comfort and J.D. Reid, *Counting subgroups and topological group topologies*, Pacific J. of Math **116** (1985), 217–241.

[2] S. Berhanu, *Hypo-analytic pseudo-differential operators*, Proceedings of AMS **105** (1989), 582–588.

[3] S. Berhanu, *Microlocal hypo-analyticity and hypo-analytic pseudodifferential operators*, Proceedings of AMS **105** (1989), 594–602.

[4] S. Berhanu, *Propagation of hypo-analyticity along bicharacteristics*, Pacific J. of Math **138** (1989), 221–232.

[5] S. Berhanu, *An asymptotic formula for hypo-analytic pseudodifferential operators*, Transactions of the AMS **322** (1990), 711–729.

[6] S. Berhanu, *Microlocal Holmgren's theorem for a class of hypo-analytic structures*, Transactions of the AMS **323** (1991), 51–64.

[7] S. Berhanu, *Propagation of singularities in a locally integrable structure*, Michigan Journal of Math **40** (1993), 119–138.

[8] S. Berhanu and S. Chanillo, *Boundedness of the FBI transform on Sobolev spaces and propagation of singularities*, Communications in PDE **16** (1991), 1665–1686.

[9] S. Berhanu and S. Chanillo, *Holder and L^p estimate for a local solution of $\overline{\partial}_b$ at top degree*, Journal of Functional Analysis **114** (1993), 232–256.

[10] S. Berhanu, *Liouville's theorem and the maximum modulus principle for a system of complex vector fields*, Communications in PDE **19** (1994), 1805–1827.

[11] S. Berhanu and G. Mendoza, *Orbits and Global unique continuation for systems of vector fields*, Journal of Geometric Analysis **7** (1997), 173–194.

[12] S. Berhanu, *Extreme points and the strong maximum principle for CR functions*, Contemporary Math **205** (1997), 1–13.

[13] S. Berhanu and A. Meziani, *On rotationally invariant vector fields in the plane*, Manuscripta Math. **89** (1996), 355–371.

[14] S. Berhanu and A. Meziani, *Global properties of a class of planar vector fields of infinite type*, Communications in PDE **22** (1997), 99–142.

[15] S. Berhanu and I. Pesenson, *The trace problem for vector fields satisfying Hormander's condition*, Mathematische Zeitschrift **231** (1999), 103–122.

[16] S. Berhanu and G. Porru, *Qualitative and quantitative estimates for large solutions to semilinear equations*, Communications in Applied Analysis **4** (2000), 121–131.

[17] S. Berhanu, F. Gladiali and G. Porru, *Qualitative properties of solutions to elliptic singular problems*, Journal of Inequal. and Appl. **3** (1999), 313–330.

[18] S. Berhanu, J. Hounie and P. Santiago, *A similarity principle for complex vector fields and applications*, Transactions of the AMS **353** (2000), 1661–1675.

[19] S. Berhanu and J. Hounie, *Uniqueness for locally integrable solutions of overdetermined systems*, Duke Math. Journal **105** (2000), 387–410.

[20] S. Berhanu and J. Hounie, *An F. and M. Riesz theorem for planar vector fields*, Mathematische Annalen **320** (2001), 463–485.

[21] S. Berhanu and J. Hounie, *A strong uniqueness theorem for planar complex vector fields*, Bol. Soc. Bras. Mat. **32** (2001), 359–376.

[22] S. Berhanu and J. Hounie, *On boundary properties of solutions of complex vector fields*, Journal of Functional Analysis **192** (2002), 446–490.

[23] S. Berhanu and J. Hounie, *Traces and the F. and M. Riesz theorem for planar vector fields*, Annales de L'Institut Fourier **53** (2003), 1425–1460.

[24] S. Berhanu and J. Hounie, *On boundary regularity for one-sided locally solvable vector fields*, Indiana University Mathematics Journal **52** (2003), 1447–1477.

[25] S. Berhanu, F. Cuccu and G. Porru, *On the boundary behaviour, including second order effects, of solutions to singular elliptic problems*, Acta Mathematics Sinica **23, No 3** (2007), 479–486.

[26] S. Berhanu and Ahmed Mohammed, *A Harnack inequality for ODE solutions*, The American Mathematical Monthly **112** (2005), 32–41.

[27] S. Berhanu and J. Hounie, *The F. and M. Riesz property for vector fields*, Contemporary Math **368** (2005), 25–39.

[28] S. Berhanu and J. Hounie, *An F. and M. Riesz theorem for a system of vector fields*, Inventiones Mathematicae **162** (2005), 357–380.

[29] S. Berhanu and C. Wang, *On the maximum principle and a notion of plurisubharmonicity for abstract CR manifolds*, Michigan Mathematical Journal, **55, Issue 1** (2007), 81–102.

[30] S. Berhanu and J. Hounie, *On the F. and M. Riesz theorem on wedges with edges of class $C^{1,\alpha}$*, Math. Zeitschrift, **255** (2007), 161–175.

[31] Z. Adwan and S. Berhanu, *Edge-of-the-wedge theory in involutive structures, The Asian Journal of Mathematics* **11, Number 1** (2007), 1–18.

[32] S. Berhanu and J. Hounie, *The Baouendi-Treves approximation theorem for continuous vector fields, The Asian Journal of Mathematics* **11, Number 1**

(2007), 55–68.

[33] S. Berhanu, *On microlocal analyticity of solutions of first-order nonlinear PDE, Annales de l'Institut Fourier* **59, Number 4** (2009), 1267–1290.

[34] S. Berhanu, *On involutive systems of first-order nonlinear partial differential equations, Trends in Mathematics, Birkhauser,* (2010), 25–50.

[35] S. Berhanu and J. Hounie, *A Rudin-Carleson theorem for planar vector fields, Mathematische Annalen* **347, Number 1** (2009), 95–110.

[36] S. Berhanu and J. Hounie, *A generalization of the Rudin-Carleson theorem, Advances in phase space analysis of partial differential equations, Birkhauser* **78,** (2009), 37–57.

[37] S. Berhanu and J. Hounie, *A Generalization of Bochner's Extension Theorem to Rough Tubes, Journal of Geometric Analysis,* **21, Number 2** (2011), 455–475.

[38] Z. Adwan and S. Berhanu, *On microlocal analyticity and smoothness of solutions of first order nonlinear pdes, Mathematische Annalen,* **352 , Number 1** (2012), 239–258.

[39] S. Berhanu and J. Hounie, *A Class of FBI Transforms, Communications in Partial Differential Equations,* **37,** (2012), 38–57.

[40] S. Berhanu and J. Hounie, *On vector fields in the plane with the reflection property, Transactions of the AMS,* **366,** (2014), 1703–1723.

[41] S. Berhanu, *On analyticity and smoothness of solutions for a class of first order nonlinear pdes, PROMS Springer-Verlag, to appear.*

[42] S. Berhanu and J. Hounie, *Boundary behavior of generalized analytic functions, Journal of Functional Analysis,* **266,** (2014), 4121–4149.

[43] S. Berhanu and Ming Xiao, *On the C^∞ version of the reflection principle for mappings between CR manifolds, American Journal of Mathematics,* **137,** (2015), 1365–1400.

[44] S. Berhanu, *The F. and M. Riesz theorem for nonelliptic Vekua's equations, Methods and Applications of Analysis,* **21,** (2014), 283–290.

[45] S. Berhanu and Ming Xiao, *On the regularity of CR mappings between CR manifolds of hypersurface type, Transactions of the AMS,* **369,** (2017), 6073–6086.

[46] S. Berhanu and Abraham Hailu, *Characterization of Gevrey regularity by a class of FBI transforms, Novel Methods in Harmonic Analysis, Springer - Verlag (Birkhauser),* **2,** (2017), 451–482.

[47] S. Berhanu and J. Hounie, *The approximation theorem of Baouendi and Treves, Journal of Complex Variables and Elliptic Equations,* **62,** (2017), 1425–1446.

[48] S. Berhanu and J. Hounie, *A Hopf lemma for holomorphic functions in Hardy spaces and applications to CR mappings, Journal d'Analyse Mathematique,* **138,** (2019), 835–855.

[49] S. Berhanu and J. Hounie, *A local Hopf lemma and unique continuation for the Helmholtz equation, Communications in PDEs,* **43,** (2018,), 448–466.

[50] S. Berhanu and Jemal Yusuf, *Continuity of a class of FBI transforms on Sobolev spaces, Houston Journal of Mathematics,* **46, No 3,** (2020,), 797–808.

[51] S. Berhanu, *Boundary unique continuation for a class of elliptic equations, American Journal of Mathematics,* **143,** (2021), 783–810.

[52] S. Berhanu, *Boundary unique continuation for the Laplace equation and the biharmonic operator, Communications in Analysis and Geometry, to appear.*

[53] S. Berhanu, *On holomorphic extendability and the strong maximum principle for CR functions, Complex Analysis and its Synergies 6, 20 (2020).*

[54] S. Berhanu, *A generalization of a microlocal version of Bochner's theorem, Transactions of the AMS,* **374,** (2021), 5269–5285.

[55] S. Berhanu, *A local Hopf lemma and unique continuation for elliptic equations, Advances in Mathematics,* **389,** (2021).

[56] S. Berhanu, *Unique continuation for systems of first order pdes, Notices of the AMS,* **68, Number 9,** (2021).

[57] S. Berhanu, *A local Hopf lemma for the Kohn Laplacian on the Heisenberg group, Analysis and Mathematical Physics 12, 72 (2022).*

[58] S. Berhanu, *Boundary unique continuation for elliptic real analytic differential operators, American Journal of Mathematics, to appear.*

Book

"An Introduction to Involutive Structures", S. Berhanu, P. Cordaro, and J. Hounie, Cambridge University Press, 2008.

Honors

(1) Elected as a Fellow of the American Mathematical Society (August, 2015) for contributions to complex analysis and partial differential equations.
(2) Elected as an Associate Fellow of the Ethiopian Academy of Sciences (July, 2014).
(3) Elected as a Fellow of the African Academy of Sciences (December, 2017).
(4) Recipient of the 2017 Dean's Distinguished Award for Excellence in Research.
(5) Appointed by the President of the AMS to serve on the Stefan Bergman Trust Fund Committee for a term of three years, Feb 1, 2020 through Jan 31, 2023.
(6) Recipient of Temple Department of Mathematics Teaching Award, 2022.

Grants

Current research is supported by the NSF for the period 2022-2025. (Continuously funded since 2002)

Professional activities

(1) Served as one of the editors of four issues of Contemporary Mathematics of the AMS.
(2) Serve as an editor of Complex Variables and Elliptic Equations, Houston Journal of Mathematics, Latin American Mathematics Series - UFScar subseries (Springer), and the African Diaspora Journal of Mathematics.
(3) Invited as one of the four main speakers at an annual Brazilian Mathematical Society Meeting in January, 2006 .
(4) Invited to speak at conferences or universities in many countries including the U.S., Canada, Brazil, Argentina, Venezuela, Mexico, France, Italy, the

United Kingdom, Austria, Switzerland, China, Morocco, Ethiopia, Taiwan, Poland, Israel, Lebanon, South Korea, Sweden, Norway, and Ireland.

(5) Have been teaching intensive summer graduate courses and mentoring doctoral students in Addis Ababa. Co-founder of the Mathematics Ph.D. program of Addis Ababa University in Ethiopia. Abraham Hailu defended his Ph.D. dissertation under my direction in June, 2016. Jemal Yusuf defended his Ph. D. dissertation under my direction in July, 2019.

(6) Since 1995, have made it possible for eighteen Ethiopians to join Temple University and graduate with a Ph.D. in Mathematics.