

Stanford



Brad Osgood

Professor of Electrical Engineering and, by courtesy, in Education

Bio

BIO

Osgood is a mathematician by training and applies techniques from analysis and geometry to various engineering problems. He is interested in problems in imaging, pattern recognition, and signal processing.

ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Professor (By courtesy), Graduate School of Education
- Member, Institute for Computational and Mathematical Engineering (ICME)

PROGRAM AFFILIATIONS

- Science, Technology and Society

PROFESSIONAL EDUCATION

- PhD, Michigan (1980)

Research & Scholarship

RESEARCH INTERESTS

- Math Education
- Technology and Education

Teaching

COURSES

2024-25

- Introduction to Matrix Methods: ENGR 108 (Win)
- The Fourier Transform and Its Applications: EE 261 (Aut)

2022-23

- Introduction to Matrix Methods: ENGR 108 (Win)
- The Fourier Transform and Its Applications: EE 261 (Aut)

2021-22

- Introduction to Matrix Methods: ENGR 108 (Win)

- The Fourier Transform and Its Applications: EE 261 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Phil Adamson, Ethan Liang, Aya Mouallem, Mark Nishimura, Giray Ogut, Robert Radway

Master's Program Advisor

Justin Chang

Doctoral (Program)

Sreela Kodali, Parth Nobel, Marina Qian, Sarah Zou

Publications

PUBLICATIONS

- **Fast DFT Computation for Signals With Structured Support** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Pochimireddy, C., Siripuram, A., Osgood, B.
2024; 70 (2): 1498-1524
- **Best Möbius Approximations of Convex and Concave Mappings** *COMPUTATIONAL METHODS AND FUNCTION THEORY*
Chuaqui, M., Osgood, B.
2023
- **On convolution, convex, and starlike mappings** *STUDIA UNIVERSITATIS BABES-BOLYAI MATHEMATICA*
Chuaqui, M., Osgood, B.
2022; 67 (2): 431-440
- **Computing the Discrete Fourier Transform of signals with spectral frequency support**
Reddy, P., Tej, V., Siripuram, A., Osgood, B., IEEE
IEEE.2021: 2381-2386
- **Convolution Idempotents With a Given Zero-Set** *IEEE TRANSACTIONS ON SIGNAL PROCESSING*
Siripuram, A., Osgood, B.
2020; 68: 4773–81
- **Some results on convolution idempotents**
Reddy, P., Siripuram, A., Osgood, B., IEEE
IEEE.2020: 1462-1467
- **Discrete Sampling: A Graph Theoretic Approach to Orthogonal Interpolation** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Siripuram, A., Wu, W. D., Osgood, B.
2019; 65 (12): 8119–30
- **A NOTE ON CONVEX CONFORMAL MAPPINGS** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*
Chuaqui, M., Osgood, B.
2019; 147 (6): 2655–59
- **LP relaxations and Fuglede's conjecture**
Siripuram, A., Osgood, B., IEEE
IEEE.2018: 2525–29
- **CONCAVE CONFORMAL MAPPINGS AND PRE-VERTICES OF SCHWARZ-CHRISTOFFEL MAPPINGS** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*
Chuaqui, M., Duren, P., Osgood, B.
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- **Discrete Sampling and Interpolation: Universal Sampling Sets for Discrete Bandlimited Spaces** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Osgood, B., Siripuram, A., Wu, W.
2012; 58 (7): 4176-4200
- **SCHWARZIAN NORMS AND TWO-POINT DISTORTION** *PACIFIC JOURNAL OF MATHEMATICS*
Chuaqui, M., Duren, P., Ma, W., Mejia, D., Minda, D., Osgood, B.
2011; 254 (1): 101-116
- **SCHWARZIAN DERIVATIVES OF CONVEX MAPPINGS** *ANNALES ACADEMIAE SCIENTIARUM FENNICAE-MATHEMATICA*
Chuaqui, M., Duren, P., Osgood, B.
2011; 36 (2): 449-460
- **Schwarzian Norms and two-point distortion** *Pacific J. Math*
Chuaqui, M., Duren, P., Ma, W., Mejia, D., Minda, D., Osgood, B.
2011; 254-1: 101–116
- **On a Theorem of Haimo regarding concave mappings** *Annales Univ. Marie Curie-Sklodowska, Mathematica*
Chuaqui, M., Duren, P., Osgood, B.
2011; 65 (2): 17-28
- **Schwarzian derivatives of convex mappings** *Ann. Acad. Sci. Fenn.*
Chuaqui, M., Duren, P., Osgood, B.
2011; 36: 449–460
- **Injectivity Criteria for Holomorphic Curves in C^n** *PURE AND APPLIED MATHEMATICS QUARTERLY*
Chuaqui, M., Duren, P., Osgood, B.
2011; 7 (1): 223-251
- **OSCILLATION OF SOLUTIONS OF LINEAR DIFFERENTIAL EQUATIONS** *BULLETIN OF THE AUSTRALIAN MATHEMATICAL SOCIETY*
Chuaqui, M., Duren, P., Osgood, B., Stowe, D.
2009; 79 (1): 161-169
- **TWO-POINT DISTORTION THEOREMS FOR HARMONIC MAPPINGS** *ILLINOIS JOURNAL OF MATHEMATICS*
Chuaqui, M., Duren, P., Osgood, B.
2009; 53 (4): 1061-1075
- **Falling factorials, generating functions, and conjoint ranking tables** *Journal of Integer Sequences*
Osgood, B., Wu, W.
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- **Schwarzian derivatives and uniform local univalence** *Comp. Methods in Function Theory.*
Chuaqui, M., Duren, P., Osgood, B.
2008; 8 (1): 21–34
- **Schwarzian derivative criteria for valence of analytic and harmonic mappings** *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY*
Chuaqui, M., Duren, P., Osgood, B.
2007; 143: 473-486
- **Univalence criteria for lifts of harmonic mappings to minimal surfaces** *JOURNAL OF GEOMETRIC ANALYSIS*
Chuaqui, M., Duren, R., Osgood, B.
2007; 17 (1): 49-74
- **A generalization of Nehari's p-criterion for univalence** *Complex Variables and Elliptic Equations*
Chuaqui, M., Osgood, B.
2007; 52: 225– 233
- **Schwarzian derivatives of analytic and harmonic functions** *International Conference on Complex and Harmonic Analysis*
Chuaqui, M., Duren, P., Osgood, B.

DESTTECH PUBLICATIONS, INC.2007: 25–33

- **Applied Calculus**
Osgood, B., Gleason, A., Hallett, D. H.
John Wiley & Sons, New York.2006
- **Ellipses, near ellipses, and harmonic Möbius transformations** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*
Chuaqui, M., Duren, P., Osgood, B.
2005; 133 (9): 2705-2710
- **Ellipses, near ellipses, and harmonic Möbius transformations**
Chuaqui, M., Duren, P., Osgood, B.
2005
- **Calculus**
Osgood, B., Gleason, A., Hallett, D. H.
John Wiley & Sons, New York.2005
- **Single and Multivariable Calculus**
Osgood, B., Gleason, A., Hallett, D. H.
John Wiley & Sons, New York.2005
- **Multivariable Calculus**
Osgood, B., Gleason, A., Hallett, D. H.
John Wiley & Sons, New York.2005
- **Optimal variable-density K-SPACE sampling in MRI** *2nd IEEE International Symposium on Biomedical Imaging*
Lee, J. H., Osgood, B., Nishimura, D. G.
IEEE.2004: 237–240
- **Curvature properties of planar harmonic mappings** *Comp. Methods in Function Theory*
Chuaqui, M., Duren, P., Osgood, B.
2004; 4: 127– 142
- **The Schwarzian derivative for harmonic mappings** *JOURNAL D ANALYSE MATHEMATIQUE*
Chuaqui, M., Duren, P., Osgood, B.
2003; 91: 329-351
- **Recent progress on the geometry of univalence criteria** *Cont. Math. vol.*
Chuaqui, M., Osgood, B.
1999; 240: 75– 87
- **The Schwarzian derivative, conformal connections, and Möbius structures** *JOURNAL D ANALYSE MATHEMATIQUE*
Osgood, B., Stowe, D.
1998; 76: 163-190
- **Quasiconformal mappings and analysis: A collection of papers honoring F. W. Gehring** *Papers from the International Symposium held in Ann Arbor, MI, August 1995.*
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edited by Duren, P., Heinonen, J., Osgood, B.
Springer-Verlag, New York.1998
- **John domains and a univalence criterion of Ahlfors** *Results in Mathematics*
Chuaqui, M., Osgood, B.
1998; 33: 203–207
- **Coefficients of small univalent functions** *Results in Mathematics*
Chuaqui, M., Osgood, B., Pommerenke, Ch.
1998; 33: 79–86

- **Old and new on the Schwarzian derivative** *International Symposium on Quasiconformal Mappings and Analysis*
Osgood, B.
SPRINGER-VERLAG. 1998: 275–308
- **Finding complete conformal metrics to extend conformal mappings** *INDIANA UNIVERSITY MATHEMATICS JOURNAL*
Chuaqui, M., Osgood, B.
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- **General univalence criteria in the disk: Extensions and extremal function** *ANNALES ACADEMIAE SCIENTIARUM FENNICAE-MATHEMATICA*
Chuaqui, M., Osgood, B.
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- **Functions with prescribed quasimetry quotients** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*
Chuaqui, M., Osgood, B., Stowe, D.
1997; 125 (7): 2195-2197
- **Weak Schwarzians, bounded hyperbolic distortion, and smooth quasimetric functions** *JOURNAL D ANALYSE MATHEMATIQUE*
Chuaqui, M., Osgood, B.
1996; 68: 209-252
- **John domains, quasidisks, and the Nehari class** *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*
Chuaqui, M., Osgood, B., POMMERENKE, C.
1996; 471: 77-114
- **AN EXTENSION OF A THEOREM OF GEHRING AND POMMERENKE** *ISRAEL JOURNAL OF MATHEMATICS*
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1995; 91 (1-3): 393-407
- **AHLFORS-WEILL EXTENSIONS OF CONFORMAL-MAPPINGS AND CRITICAL-POINTS OF THE POINCARÉ METRIC** *COMMENTARII MATHEMATICI HELVETICI*
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- **SHARP DISTORTION-THEOREMS ASSOCIATED WITH THE SCHWARZIAN DERIVATIVE** *JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES*
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- **THE SCHWARZIAN DERIVATIVE AND CONFORMAL MAPPING OF RIEMANNIAN-MANIFOLDS** *DUKE MATHEMATICAL JOURNAL*
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1992; 67 (1): 57-99
- **THE SCHWARZIAN DERIVATIVE AND CONFORMALLY NATURAL QUASI-CONFORMAL EXTENSIONS FROM ONE-DIMENSION TO 2-DIMENSION TO 3-DIMENSIONS** *MATHEMATISCHE ANNALEN*
Chuaqui, M., Osgood, B.
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- **The Möbius connection in the bundle of conformal 2-jets** *Idaho State Conf. on Vector Bundles in Complex Di. Geom.*
Osgood, B.
1992
- **A GENERALIZATION OF NEHARIS UNIVALENCE CRITERION** *COMMENTARII MATHEMATICI HELVETICI*
Osgood, B., Stowe, D.
1990; 65 (2): 234-242
- **MODULI SPACE, HEIGHTS AND ISOSPECTRAL SETS OF PLANE DOMAINS** *ANNALS OF MATHEMATICS*
Osgood, B., Phillips, R., Sarnak, P.
1989; 129 (2): 293-362
- **EXTREMALS OF DETERMINANTS OF LAPLACIANS** *JOURNAL OF FUNCTIONAL ANALYSIS*

- Osgood, B., Phillips, R., Sarnak, P.
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- **COMPACT ISOSPECTRAL SETS OF SURFACES** *JOURNAL OF FUNCTIONAL ANALYSIS*
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 - **COMPACT ISOSPECTRAL SETS OF PLANE DOMAINS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Osgood, B., Phillips, R., Sarnak, P.
1988; 85 (15): 5359-5361
 - **THE SCHWARZIAN DISTANCE BETWEEN DOMAINS - A QUESTION** *ANNALES ACADEMIAE SCIENTIARUM FENNICAE-MATHEMATICA*
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 - **The quasihyperbolic metric and associated estimates on the hyperbolic metric** *Jour. d'Analyse Math.*
Martin, G., Osgood, B.
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 - **Hyperbolic curvature and conformal mapping** *Bull. London Math. Soc.*
Flinn, B., Osgood, B.
1986; 18: 272-276
 - **Some properties of f''/f' and the Poincaré metric** *Indiana Univ. Math. Jour.*
Osgood, B.
1982; 31: 449-461
 - **Univalence criteria in multiply connected domains** *Trans. Amer. Math. Soc.*
Osgood, B.
1980; 260: 459-473