

Stanford



Brad Osgood

Professor of Electrical Engineering and, by courtesy, of 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

2020-21

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

2019-20

- Introduction to Matrix Methods: CME 103, EE 103 (Win)
- The Fourier Transform and Its Applications: EE 261 (Aut)

2018-19

- Introduction to Matrix Methods: CME 103, EE 103 (Aut)

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

2017-18

- Introduction to Matrix Methods: CME 103, EE 103 (Spr)
- The Fourier Transform and Its Applications: EE 261 (Aut)
- Vector Calculus for Engineers: CME 100, ENGR 154 (Win)
- Vector Calculus for Engineers, ACE: CME 100A (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Kasra Naftchi-Ardebili, Jonathan Tuck

Master's Program Advisor

Guille de Leon Archila

Doctoral (Program)

Kevin Chen, Sreela Kodali, Tara Mina

Publications

PUBLICATIONS

- **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.
2012; 140 (10): 3495-3505
- **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., Mejía, 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., Mejía, 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.
2009; 12
 - **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.
DESTECH 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 Mobius 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.*
Osgood, B.
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.
1998; 47 (4): 1273-1291
- **General univalence criteria in the disk: Extensions and extremal function** *ANNALES ACADEMIAE SCIENTIARUM FENNICAE-MATHEMATICA*
Chuaqui, M., Osgood, B.
1998; 23 (1): 101-132
- **Functions with prescribed quasisymmetry 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 quasisymmetric 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*
Chuaqui, M., Osgood, B.

1995; 91 (1-3): 393-407

- **AHLFORS-WEILL EXTENSIONS OF CONFORMAL-MAPPINGS AND CRITICAL-POINTS OF THE POINCARÉ METRIC** *COMMENTARII MATHEMATICI HELVETICI*
Chuaqui, M., Osgood, B.
1994; 69 (4): 659-668
- **SHARP DISTORTION-THEOREMS ASSOCIATED WITH THE SCHWARZIAN DERIVATIVE** *JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES*
Chuaqui, M., Osgood, B.
1993; 48: 289-298
- **THE SCHWARZIAN DERIVATIVE AND CONFORMAL MAPPING OF RIEMANNIAN-MANIFOLDS** *DUKE MATHEMATICAL JOURNAL*
Osgood, B., Stowe, D.
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.
1992; 292 (2): 267-280
- **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.
1988; 80 (1): 148-211
- **COMPACT ISOSPECTRAL SETS OF SURFACES** *JOURNAL OF FUNCTIONAL ANALYSIS*
Osgood, B., Phillips, R., Sarnak, P.
1988; 80 (1): 212-234
- **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*
Osgood, B., Stowe, D.
1987; 12 (2): 313-318
- **The quasihyperbolic metric and associated estimates on the hyperbolic metric** *Jour. d'Analyse Math.*
Martin, G., Osgood, B.
1986; 47: 37-53
- **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