Maria van der Walt | Curriculum Vitae

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Education

University of Missouri-St. Louis — **St. Louis, MO**
Doctor of Philosophy (Applied Mathematics) — *May 2015*
Title of thesis: "Wavelet analysis of non-stationary signals with applications"
Thesis advisor: C.K. Chui

Stellenbosch University — **Stellenbosch, South Africa**
Master of Science (Mathematics), Cum Laude — *December 2012*
Title of thesis: "Ternary interpolatory subdivision"
Supervisor: J.M. de Villiers

Stellenbosch University — **Stellenbosch, South Africa**
Bachelor of Science (Honors) (Mathematics), Cum Laude — *December 2010*

Stellenbosch University — **Stellenbosch, South Africa**
Bachelor of Science (Mathematical Sciences), Cum Laude — *December 2009*
Majors: Mathematics, Applied Mathematics

Employment history

Westmont College — **Santa Barbara, CA**
Assistant professor — *August 2017 – present*
Courses taught:
- Calculus I — *Fall 2017*

Vanderbilt University — **Nashville, TN**
Assistant professor — *August 2015 – July 2017*
Courses taught:
- Linear Algebra — *Summer 2017*
- Introduction to Numerical Mathematics — *Spring 2017*
- Methods of Linear Algebra — *Fall 2016, Spring 2017*
- Accelerated Single-Variable Calculus II — *Summer 2016*
- Differential Equations and Linear Algebra — *Spring 2016*

University of Missouri-St. Louis — **St. Louis, MO**
Graduate teaching assistant / Instructor — *January 2013 – May 2015*
Courses taught as instructor of record:
- Trigonometry — *Spring 2014, Fall 2014, Spring 2015*
- Basic Probability and Statistics — *Spring 2014*
- Intermediate Algebra — *Fall 2013*
- Beginning Algebra — *Fall 2013*

Stellenbosch University — **Stellenbosch, South Africa**
Temporary lecturer — *July 2012 – December 2012*

Courses taught:
- Calculus I

Stellenbosch University **Stellenbosch, South Africa**
Tutorial coordinator *January 2012 – July 2012*
Tutorial programs managed:
- Mathematics for the Biological Sciences

Stellenbosch University **Stellenbosch, South Africa**
Teaching assistant *January 2009 – July 2012*
Courses tutored:
- Calculus I *2009,2011,2012*
- Mathematics for the Biological Sciences *2009,2010,2011,2012*
- Introductory Mathematics *2010*
- Introductory Differential and Integral Calculus *2010,2011*
- Further Differential and Integral Calculus *2010,2011*
- Differential Equations and Linear Algebra *2011,2012*
- Series, Partial Differential Equations and Fourier Transform *2010,2011*
- Linear Programming *2009*
- Nonlinear Optimization *2009*

Research papers and publications

- C.K. Chui and M.D. van der Walt, "Sparse phase retrieval of one-dimensional signals using SSO", in preparation.
- C.V. Beccari, M. Neamtu and M.D. van der Walt, "On the approximation order of rational geometric splines", in preparation.
- H.N. Mhaskar, S.V. Pereverzyev and M.D. van der Walt, "A deep learning approach to diabetic blood glucose prediction", Front. Appl. Math. Stat., 2017
- M.D. van der Walt, "Real-time, local spline interpolation schemes on bounded intervals", Applied Mathematical Sciences, 10(5): 205–234, 2016.
- C.K. Chui, H.N. Mhaskar and M.D. van der Walt, "Data-driven atomic decomposition of real-world signals", International Journal on Geomathematics, 6(1):1–30, 2016.
- C.K. Chui and M.D. van der Walt, "Signal analysis via instantaneous frequency estimation of signal components", International Journal on Geomathematics, 6(1):1–42, 2015.

Conference, colloquium and seminar talks

Invited talks

1st International Conference on Mathematics of Data Science **Hong Kong**
Title of talk: "Atomic signal decomposition via SuperEMD" *March 20-24, 2017*

Colloquium: Department of Mathematics, Westmont College **Santa Barbara, CA**
Title of talk: "Two of my favorite recent research projects" *November 14, 2016*

Mecklenburg Workshop on
Approximation Methods and Data Analysis **Hasenwinkel, Germany**
Title of talk: "Data-driven atomic decomposition via frequency extraction of intrinsic mode functions" *September 5-9, 2016*

Colloquium: Department of Mathematical and Statistical Sciences, University of Alberta — **Edmonton, Canada**
Title of talk: "Signal analysis via instantaneous frequency estimation of signal components" — *February 3, 2015*

Computational Analysis Seminar: Vanderbilt University — **Nashville, TN**
Title of talk: "Signal analysis via instantaneous frequency estimation of signal components" — *November 12, 2014*

Contributed talks

15th International Conference on Approximation Theory — **San Antonio, TX**
Title of talk: "Data-driven atomic decomposition via frequency extraction of intrinsic mode functions" — *May 22-25, 2016*

Analysis Seminar: Saint Louis University — **St. Louis, MO**
Title of talk: "Signal analysis via instantaneous frequency estimation of signal components" — *November 7, 2014*

55th Annual SAMS Congress — **Stellenbosch, South Africa**
Title of talk: "Ternary interpolatory subdivision" — *October 31 - November 2, 2012*

Postgraduate Seminar: Department of Mathematical Sciences, Stellenbosch University — **Stellenbosch, South Africa**
Title of talk: "Ternary interpolatory subdivision" — *May 11, 2012*

Awards

University of Missouri-St. Louis — **St. Louis, MO**
Edward Z. Andalafte Memorial Scholarship — *2015*
Graduate School Doctoral Recruitment Fellowship — *2013,2014*

Stellenbosch University — **Stellenbosch, South Africa**
Stellenbosch University medal for the best master's student in the Faculty of Science — *2012*
Dean's medal for the best achieving honors student in the Faculty of Science — *2010*
Rector's award for excellent achievement (academic) for the best achieving honors student in the Faculty of Science — *2010*
G.B.B. Rubbi book prize for best marks obtained in Mathematics — *2007,2008,2009,2010*
Merit bursary — *2007,2008,2009,2010*

Other — **South Africa**
6th highest final grade in the Western Cape province in the Senior Certificate Examinations — *2006*
Highest marks in the Western Cape province in Mathematics and Music in the Senior Certificate Examinations — *2006*

Service

- Review Editor for *Mathematics of Computation and Data Science*, Frontiers in Applied Mathematics and Statistics — *September 2016 – present*
- Referee for *Signal Processing* — *2016*
- Referee for *Journal of Approximation Theory* — *2015*
- Referee for *Applied and Computational Harmonic Analysis* — *2015*