

Maria van der Walt | Curriculum Vitae

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Education

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| University of Missouri-St. Louis <i>Doctor of Philosophy (Applied Mathematics)</i> Title of thesis: "Wavelet analysis of non-stationary signals with applications" Thesis advisor: C.K. Chui | St. Louis, MO May 2015 |
| Stellenbosch University <i>Master of Science (Mathematics), Cum Laude</i> Title of thesis: "Ternary interpolatory subdivision" Supervisor: J.M. de Villiers | Stellenbosch, South Africa December 2012 |
| Stellenbosch University <i>Bachelor of Science (Honors) (Mathematics), Cum Laude</i> | Stellenbosch, South Africa December 2010 |
| Stellenbosch University <i>Bachelor of Science (Mathematical Sciences), Cum Laude</i> Majors: Mathematics, Applied Mathematics | Stellenbosch, South Africa December 2009 |

Employment history

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| Westmont College <i>Assistant professor</i> Courses taught: <ul style="list-style-type: none">○ Calculus I○ Calculus II○ Introduction to Subdivision Methods | Santa Barbara, CA August 2017 – present Fall 2017, Spring 2018 Spring 2018 Spring 2018 |
| Vanderbilt University <i>Assistant professor</i> Courses taught: <ul style="list-style-type: none">○ Linear Algebra○ Introduction to Numerical Mathematics○ Methods of Linear Algebra○ Accelerated Single-Variable Calculus II○ Differential Equations and Linear Algebra | Nashville, TN August 2015 – July 2017 Summer 2017 Spring 2017 Fall 2016, Spring 2017 Summer 2016 Spring 2016 |
| University of Missouri-St. Louis <i>Graduate teaching assistant / Instructor</i> Courses taught as instructor of record: <ul style="list-style-type: none">○ Trigonometry○ Basic Probability and Statistics○ Intermediate Algebra○ Beginning Algebra | St. Louis, MO January 2013 – May 2015 Spring 2014, Fall 2014, Spring 2015 Spring 2014 Fall 2013 Fall 2013 |

Stellenbosch University*Adjunct instructor*

Courses taught:

- Calculus I

Stellenbosch, South Africa*July 2012 – December 2012***Stellenbosch University***Tutorial coordinator*

Tutorial programs managed:

- Mathematics for the Biological Sciences

Stellenbosch, South Africa*February 2012 – June 2012***Stellenbosch University***Tutor*

Courses tutored:

- Calculus I
- Mathematics for the Biological Sciences
- Introductory Mathematics
- Introductory Differential and Integral Calculus
- Further Differential and Integral Calculus
- Differential Equations and Linear Algebra
- Series, Partial Differential Equations and Fourier Transform
- Linear Programming
- Nonlinear Optimization

Stellenbosch, South Africa*February 2009 – June 2012*

2009,2011,2012
2009,2010,2011,2012
2010
2010,2011
2010,2011
2011,2012
2010,2011
2009
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.....***Midwestern Workshop on Asymptotic Analysis**

Title of talk: “Signal decomposition via SuperEMD”

Indianapolis, IN*October 6-8, 2017***1st International Conference on Mathematics of Data Science**

Title of talk: “Atomic signal decomposition via SuperEMD”

Hong Kong*March 20-24, 2017***Colloquium: Department of Mathematics, Westmont College**

Title of talk: “Two of my favorite recent research projects”

Santa Barbara, CA*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. Andalafta 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

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, 2017*