

UNIVERSITY OF PRETORIA
FORMAT OF CURRICULUM VITAE

1. BIOGRAPHICAL SKETCH

1.1 GENERAL INFORMATION									
Surname	Jooste								
First names	Aletta Sophia			ID Number	6206230144088				
				Passport Nr	A02069433				
Citizenship	South African			Title	Dr	Female	x	Male	
Place of birth	Pretoria			Date of birth	23 June 1962				
Population group	African	Coloured	Indian	White	x	Other			
Department	Mathematics and Applied Mathematics			Position	Senior Lecturer				
Direct Telephone	012 420 2875			Direct Telefax	012 420 3893				
e-mail	Alta.jooste@up.ac.za								
Date of appointment	1 January 2006			Permanent full-time	x	Temporary full-time			

1.2 ACADEMIC QUALIFICATIONS OBTAINED				
Degree	Field of study	Higher education institution	Year	Distinctions
PhD	Applied Mathematics	University of Pretoria	2013	N/A
MSc	Applied Mathematics	University of Pretoria	1986	With distinction
BSc(Honns)	Applied Mathematics	University of Pretoria	1984	With distinction
BSc	Mathematics, Physics, Applied Mathematics	University of Pretoria	1983	With distinction

1.3 WORK EXPERIENCE TO DATE		
Name of employer	Capacity and/or type of work	Period From (mm//yy to mm//yy)
UP	Senior Lecturer (Permanent position)	01/17 to date
	Lecturer (Permanent position)	01/11 to 12/16
	Lecturer (Temporary)	01/06 to 12/10
UNISA	Full Time (contract position)	04/04 to 12/05
Jooswald Konstruksie (Pty) Ltd	Administrative and General manager	10/97 to 03/04
UNISA	External Marker	01/98 to 12/03

2. RESEARCH ACTIVITIES

5.1 FORMER SUPERVISION OR CO-SUPERVISION (COMPLETED)					
Name of student	Degree/Title of dissertation/ thesis and date completed	Supervisor	Co-supervisor	Duration of studies	
Abduelgalil Khedar (AIMS)	MSc: Properties of the zeros of the Meixner-Pollaczek polynomials, July 2015	Alta Jooste		1	
Oluwatosin Babasola (AIMS)	MSc: The behaviour of the zeros of the Hermite polynomials and applications in Finance, July 2016	Alta Jooste		1	
Abey Kelil	PhD: Properties of a class of generalized Freud polynomials, January 2018	KH Jordaan	Alta Jooste	4	
5.2 CURRENT POSTGRADUATE STUDENTS					
Name of student	Degree enrolled for and date of first registration	Project title	Supervisor	Co-supervisor	Year of registration
Tarutira Chikukwa	MSc (2017)		AS Jooste	G van Zyl	2017
Abey Kelil	Post-Doc (2018)		AS Jooste		2018

5.3 OBTAINING RESEARCH FUNDS (Optional)			
Origin of research funds (e.g. contract research, THRIP, international funding organisations, other(s))	Title of research project or programme	Duration	Money allocated (R) (Optional)
DFG TWAS Scholarship	Computer Algebra Applied to Orthogonal Polynomials	Dec 2016 - Feb 2017	
RDP Funding	Bounds for the zeros of Meixner-Pollaczek and Romanovski polynomials	2014 2015 2016	
AGNES Grant for Junior Researchers		2014	
Vice Chancellor's Academic Development Grant		Oct-Dec 2014	
NRF Grant	Zeros of Discrete Orthogonal Polynomials	2008-2011	

3. RESEARCH OUTPUTS

6.1 PUBLICATIONS IN PEER-REVIEWED OR REFEREED JOURNALS
Provide full details of each publication, including full titles, names of all the authors, journals, dates, page numbers etc.

1. K Driver, A Jooste and K Jordaan. Stieltjes interlacing of zeros of Jacobi polynomials from different sequences. *Electronic Transactions on Numerical Analysis* 38 (2011), 317-326. (Impact factor 0.8)
2. A Jooste, K Jordaan and F Toókos. On the zeros of Meixner polynomials. *Numerische Mathematik* 124 (2013), 57-71. (Impact factor 1.551)
3. A Jooste and K Jordaan. Bounds for the zeros of Meixner and Kravchuk polynomials. *LMS Journal of Computation and Mathematics* 17 (1) (2014), 47-57. (Impact factor 0.413)
4. SJ Johnston, A Jooste and K Jordaan. Quasi-orthogonality of some hypergeometric polynomials. *Integral Transforms and Special Functions* 27(2) (2016), 111-125. (Impact factor 0.873)
5. K Driver and A Jooste. Quasi-orthogonal Meixner polynomials. *Quaestiones Mathematicae* Volume 40 (4) (2017), 477-490. (Impact factor 0.398)
6. A Jooste, P Njionou Sadjang and W Koepf. Inner bounds for the extreme zeros of $3F_2$ hypergeometric polynomials. *Integral Transforms and Special Functions* 28(5), (2017), 361-373. (Impact factor 0.528)
7. AS Jooste, W Koepf and D Tcheutia. Mixed recurrence relations and interlacing properties for zeros of classical q-orthogonal polynomials. *Applied Numerical Mathematics* 125 (2018), 86-102. (Impact factor: 1.087)
8. AS Jooste, W Koepf and DD Tcheutia. Stieltjes interlacing of zeros of classical orthogonal sequences. Submitted December 2017.
9. AS Jooste, W Koepf and DD Tcheutia. Quasi-orthogonality of some hypergeometric and q-hypergeometric polynomials. Submitted January 2018.

6.6 TECHNICAL REPORTS
<p>Provide full details.</p> <p>UPWT2008/13</p> <p>A Jooste and K Jordaan</p> <p>Real zeros of Meixner and Krawtchouk polynomials</p>

7. OTHER SCHOLARLY RESEARCH-BASED CONTRIBUTIONS

7.1 PARTICIPATION IN CONFERENCES, WORKSHOPS AND SHORT COURSES - SPECIFY TYPE OF CONTRIBUTION
<p>Provide full details of participation in national and international conferences etc</p>
<p>7.1.1 National</p> <ul style="list-style-type: none"> • SANUM 2018: University of Stellenbosch, 4-6 April 2018. Talk: On q-orthogonal polynomials: something old and something new. • SANUM 2016: University of Stellenbosch, 20-24 March 2016. Talk: On the zeros of Meixner and Meixner-Pollaczek polynomials. • SANUM 2015: University of Pretoria, 30 March-1 April 2015. Poster: New bounds for the extreme zeros of Meixner polynomials. • SAMS 2014, University of South Africa (UNISA), Florida, 29-31 Oct.

Talk: Quasi-orthogonality and real zeros of some hypergeometric polynomials.

- **SAMS 2012**, Stellenbosch University, 31 Oct- 2 Nov.
Talk: On the zeros of Meixner and Krawtchouk polynomials.
- **SAMS 2010**, University of Pretoria, 3-5 Nov.
Talk: Stieltjes interlacing of the zeros of Jacobi polynomials.
- **Postgraduate Seminar**, Nelson Mandela Metropolitan University, 23-24 Sept 2010.
Talk: Stieltjes interlacing of zeros of Jacobi polynomials.
- **SAMS 2009**, University of Johannesburg, 2-4 Nov.
Talk: The zeros of discrete orthogonal polynomials.
- **Workshop on Orthogonal Polynomials**, AIMS, Muizenberg, 22-24 June 2009.
Talk: Real zeros of Meixner and Krawtchouk polynomials.
- **SAMS 1986**: Johannesburg University.
Talk: B-evolutions and the Laplace transform.

7.1.2 International

- **AIMS-Volkswagen Stiftung Workshop on Introduction to Computer Algebra and Applications**, October 6-13, 2017, Douala, Cameroon.
- **SAMSA 2015** (Southern African Mathematical Sciences Association), November 23-27, Windhoek, Namibia.
Talk: Quasi-orthogonality of Meixner-Pollaczek and some ${}_3F_2$ hypergeometric polynomials.
- **FoCM'14** (Foundations of Computational Mathematics), December 11-20, 2014, Montevideo, Uruguay.
Poster: Completed Stieltjes interlacing of zeros of different orthogonal polynomials.
- **OPSFA 12**, 2013. (Symposium on Orthogonal Polynomials, Special Functions and Applications), March 25-29, 2013, Tunisia.
Talk: Bounds for zeros of Meixner and Krawtchouk polynomials.
- **CMFT 2009** (Computational Methods and Function Theory), June 8-12, Ankara, Turkey.
Talk: Real zeros of the Meixner and Krawtchouk polynomials.
- **1992**: I attended an international conference in Germany on Evolution Equations.

7.2 TEAMWORK AND COLLABORATION WITH OTHERS:

7.2.1 Other researchers (national and international)

Local:

- Prof KH Jordaan (UP)
- Prof KA Driver (UCT)
- Prof SJ Johnston (UNISA)

International:

- 2011-2013: Dr F Toókos (Helmholtz Zentrum, Institute for Biomathematics and Biometry, Munich, Germany)
- 2015-2017: Prof W Koepf (University of Kassel, Kassel, Germany)
- 2015: Dr P Njionou Sadjang (University of Yaounde I, Cameroon)
- 2016-2017: Dr D Tcheutia (University of Kassel, Germany)

Only collaborators are listed where concrete outputs were obtained. Dr F Toókos visited the Department of Mathematics and Applied Mathematics on at least one occasion to work on a joint research project.

Post-doc students:

Drs Njiounou-Sadjang and Tcheutia were post-doc students of Prof Koepf at the time that I visited him in Kassel from 2015-2017. The Tcheutia visited me in December 2017 and January 2018. Altogether 4 papers (2 accepted, 2 submitted) were written together with these post-doc students.

7.3 MEMBERSHIP IN NATIONAL AND INTERNATIONAL BODIES

List all the scientific associations or societies to which you belong. Name your involvement, e.g. honorary member, founder member, full member, chairman, president, secretary

National: SAMS (South African Mathematical Society), member

International: AMS (American Mathematical Society), member

7.4 VISITS TO LOCAL AND OVERSEAS UNIVERSITIES OR RESEARCH INSTITUTES AS GUEST PROFESSOR OR RESEARCHER

Visits as Researcher:

1. January 2011. Research visit to Dr Ferenc Toókos at the Helmholtz Centre in Munich. A talk was presented on: Stieltjes interlacing of zeros of Jacobi polynomials from different sequences.
2. 1 July 2015-15 August 2015: Research visit to Prof Wolfram Koepf at the University of Kassel, Germany. A talk was presented: "On the zeros of orthogonal polynomials".
3. 1 December 2016-25 February 2017: Research Visit to Prof Wolfram Koepf at the University of Kassel. (TWAS and DFG scholarship)
4. 6 June 2017-14 July 2017, Research visit to Prof Wolfram Koepf at the University of Kassel, Germany. A talk was presented: "Quasi-orthogonality of orthogonal polynomials".

10. COMMUNITY SERVICE OR PROFESSIONAL SKILLS**10.1 OUTREACH PROJECTS**

(e.g. project titles, institutions and communities involved, etc.)

1. UP with Science Project.

During 2014 I was involved in the "UP with Science" project. "UP with Science" is a science enrichment programme for secondary school learners presented by the Faculty of Natural and Agricultural Sciences of the University of Pretoria on the Hatfield campus. The learners choose a subject (e.g., Physics, Chemistry, Biochemistry) and a group of seven grade 11 students chose to do the Mathematics project: The quickest path from A to B.

2. SANUM 2015 Conference

The South African Symposium of Numerical and Applied Mathematics (SANUM 2015) was hosted by the Department of Mathematics and Applied Mathematics of the University of Pretoria, from 30 March -1 April 2015. I was on the local organising committee of this conference and I dealt with invoices, registration fees, the arrangements for the Gala Dinner and the gifts that were handed out to the participants.

3. Review of papers for Mathematical Reviews.

Since 2016, I have made myself available to write reviews for inclusion in the Mathematical Reviews database. Up to now I have reviewed four published papers under the reviewer number 121018.

4. SAMSA 2016

Local organising committee: Annual conference of the Southern Africa Mathematical Sciences Association (SAMSA 2016), hosted by the University of Pretoria, November 21 – 24, 2016.

10.4 INVOLVEMENT WITH OTHER UNIVERSITIES/SCIENTIFIC INSTITUTIONS

(e.g. external examiner, editor of journal, advisory council, CSIR, SA Council for Scientific Professions)

In 2010 I was the external examiner of the course JWS 120 Mathematics, a first year Calculus course of the Faculty of Education on the Groenkloof campus.

11. AWARDS AND SCIENTIFIC/SCHOLARLY RECOGNITION

11.2 RESEARCH AWARDS AND PRIZES

AGNES Grant for Junior Researchers 2014 – supported by AvH and TWAS

The AGNES Grant for Junior Researchers of EUR 1000 is made possible by sponsorship from the Alexander von Humboldt Foundation (AvH) and The World Academy of Sciences (TWAS).

Citation:

"The Grant acknowledges your academic prowess and encourages you to seek for further opportunities in research. In particular, your nominator shall guide and inform you with respect to post-doc funding possibilities in Germany via the all-encompassing and generous Georg Forster-Hermes Programme that is offered by the AvH. We hope that your future application will be accepted by the AvH for a prestigious post-doc fellowship, and you can join the ranks of AGNES = African-German Network of Excellence in Science. We further hope that you will contribute to the scientific welfare of the African continent!"

11.3 TEACHING AWARDS AND PRIZES

Full details are required

In November 2014 I was awarded the “Excellence in Teaching” award by the Department of Mathematics and Applied Mathematics, for my contribution in the re-structuring and implementation of the Pre-Calculus course WTW 133. The Citation reads as follows:

“The BSc Extended programme has been restructured to be functional in 2014, a major process that required rethinking of a teaching model that is applicable to almost a thousand students, spread over three campuses. Alta Jooste has been instrumental in this process and has been a dedicated leader in the important first year pre-calculus module WTW 133. She guided and monitored the activities of the WTW 133 module in her capacity as course coordinator. She tirelessly commuted between campuses, always keeping a tight rein on the academic activities. The excellent and vastly improved results of this module are testimony to the role she played in this process and to her leadership. The department has received praise for the improved model, the success of which is a contributor to access of large numbers of previously disadvantaged students. Alta’s input into restructuring and leading this important entrance module makes her a worthy recipient of this reward.”

References:

1. Prof Roumen Anguelov, Department of Mathematics and Applied Mathematics, University of Pretoria, roumen.anguelov@up.ac.za, Tel 012 4202874.
2. Prof Wolfram Koepf, University of Kassel, koepf@mathematik.uni-kassel.de.

Aletta Sophia Jooste
24 April 2018
Pretoria.