

1. BIOGRAPHICAL SKETCH

1.1 GENERAL INFORMATION									
Surname	Banasiak								
First names	Jacek			ID Number	5903156195083				
Citizenship	South African			Title	Prof	Female	<input type="checkbox"/>	Male	<input checked="" type="checkbox"/>
Place of birth	Łódź, Poland			Date of birth	15/03/1959				
Department	Mathematics and Applied Mathematics			Position	DST/NRF SARChI Chair in Mathematical Models and Methods in Biosciences and Bioengineering				
Direct Telephone	0124202478			Direct Telefax					
e-mail	jacek.banasiak@up.ac.za								
Date of appointment	1/1/2016			Permanent full-time	<input checked="" type="checkbox"/>	Temporary full-time	<input type="checkbox"/>		

1.2 ACADEMIC QUALIFICATIONS OBTAINED				
Degree/ Diploma	Field of study	Higher education institution	Year	Distinctions
Masters	Engineering	Technical University of Łódź,	1981	With distinction
PhD	Mathematics	University of Strathclyde, Glasgow, U.K.	1989	n/a
DSc (habilitation)	Equations of Mathematical Physics	University of Warsaw	1999	n/a

1.3 WORK EXPERIENCE TO DATE		
Name of employer	Capacity and/or type of work	Period From (mm/yy to mm/yy)
Technical University of Łódź	Assistant (junior lecturer)	1981-1983
Technical University of Łódź	Senior assistant (lecturer)	1984-1987
Polish Academy of Sciences	Research associate (on study leave)	1986
Technical University of Łódź	Adiunkt (senior lecturer)	1988-1992
University of Natal	Lecturer	1992-1995

University of Natal	Senior lecturer	1996-1997
University of Natal	Associate professor	1998-2001
University of Natal/University of KwaZulu-Natal	Professor	2002-2008
Technical University of Łódź	Extraordinary professor	2008-
University of KwaZulu-Natal	Senior professor	2008-2015
University of Strathclyde	Visiting professor (4x 3 year appointments)	2010-2021
University of KwaZulu-Natal	Research professor	2011-2015
University of Pretoria	Professor and DST/NRF SARChI Chair in Mathematical Models and Methods in Biosciences and Bioengineering	2016-
Technical University of Łódź	Research Professor	2019-

2. TEACHING ACTIVITIES

2.1 COURSES PRESENTED		
Course	Level (e.g. second year, Masters)	Self developed (Yes or No)
Population Balance Equations with Applications, GIAN Programme, IIT Roorkee, 2018	Postgraduate/Postdoctoral	Yes
Methods of Small Parameter, 2011, AIMS (SA)	Masters	Yes
Population Dynamics, 2012, AIMS (SA)	Masters	Yes
Differential Equations and Modelling, 2005, 2013, AIMS (SA) and 2017AIMS (Cameroon)	Masters	Yes
Asymptotic Analysis of Singularly Perturbed Dynamical Systems of Kinetic Type, CIMPA Research School, Muizenberg, 2007	Postdoctoral	Yes
Population Dynamics, Muizenberg, CIMPA Research School 2011, Naivasha, Kenya, 2015	Postdoctoral	Yes
Positive Semigroups, CIMPA Research School, Muizenberg, 2013	Postdoctoral	Yes
Population Modelling, SACEMA	Postgraduate/postdoctoral	Yes
Applied Functional Analysis 2012-2017 (Technical University of Łódź,)	Doctoral	Yes
Applied Positive Semigroups (Interuniversity PhD programme held at the University of Lublin, 2014	Doctoral	Yes

Applied Banach Lattices -2018 (Technical University of Łódź,)	Doctoral	Yes
Supervisor in the IIASA-NRF SA Young Scientists Summer, UFS, 2012-2015	Postdoctoral	Yes
Population Dynamics, CIMPA Training for Research Course, University of Nairobi, 2015	Postdoctoral	Yes
Mathematical Epidemiology, University of Pretoria, 2016- 2019	MSc	Yes
Basic Mathematical Models in Epidemiology and Species Invasion, a course at Global change impact on diseases and alien species expansion: a capacity building workshop, AIMS, Cape Town, May 2-6 2016	Postgraduate	Yes
Measure Theory, UKZN, 2015	Honours	No
Nonlinear Partial Differential Equations, UKZN, 2010-2015	Honours	Yes
Partial Differential Equations, UND/UKZN 1995-2005	3 rd year	Yes

2.2 OTHER EDUCATION AND PEDAGOGIC COURSES PRESENTED

Course	Year	Institution

3. TEACHING OUTPUTS

3.1 EDUCATIONAL PUBLICATIONS AND PRODUCTS

All lecture notes for the courses developed by me are available at <http://www.up.ac.za/en/sarchi-chair-m3b2/article/2700558/teaching-material>

Videotaped course on Basic Mathematical Models in Epidemiology and Species Invasion is available on <https://video.search.yahoo.com/yhs/search?fr=yhs-Lkry-newtab&hsimp=yhs-newtab&hspart=Lkry&p=youtube+jacek+banasiak+AIMS#id=1&vid=7b97886933b7a68ba8c69c2415747a0c&action=click>

<https://video.search.yahoo.com/yhs/search?fr=yhs-Lkry-newtab&hsimp=yhs-newtab&hspart=Lkry&p=youtube+jacek+banasiak+AIMS#id=3&vid=ded6c9c407910edc3562760231e9c52c&action=view>

<https://video.search.yahoo.com/yhs/search?fr=yhs-Lkry-newtab&hsimp=yhs-newtab&hspart=Lkry&p=youtube+jacek+banasiak+AIMS#id=2&vid=eff8ef97d2e006cc4cedc69a29ed56eb&action=view>

GIAN course available at

https://www.researchgate.net/profile/Jacek_Banasiak/publication/329399000_Population_Balance_Equations_with_Applications/links/5c067757458515ae5445de14/Population-Balance-Equations-with-Applications.pdf

4. OTHER TEACHING CONTRIBUTIONS

4.1 MEMBERSHIP OF NATIONAL AND INTERNATIONAL BODIES

4.2 VISITS TO LOCAL AND OVERSEAS UNIVERSITIES AS GUEST PROFESSOR OR LECTURER IN REGARD TO TEACHING

4.3 PARTICIPATION IN NATIONAL AND INTERNATIONAL TEACHING ASSOCIATIONS, BODIES, COMMITTEES

5. RESEARCH ACTIVITIES

5.1 FORMER SUPERVISION OR CO-SUPERVISION (COMPLETED)

Name of student	Degree/Title of dissertation/thesis and date completed	Supervisor	Co-supervisor(s)	Duration of studies (years)
Luke Joel (UKZN)	PhD 2019	Fragmentation-coagulation processes	S. Shindin	4 years

		with growth and decay			
Aleksandra Falkiewicz (TUL)	PhD 2018	J Banasiak			4 years
Milaine Seuneu Tchamga (UKZN)	PhD 2108	J Banasiak			4 years
Eddy Kimba Phongi, (UKZN)	PhD 2015	J Banasiak			4 years
Amartya Goswami, (UKZN)	PhD 2013	J Banasiak			5 years
Rodrigue Y. M'pika Massoukou (UKZN)	PhD 2014	J Banasiak			4 years
Proscovia Namayanja(UKZN)	PhD 2012	J Banasiak			3 years
Oukoumi Noutchie Soares Clovis (UKZN)	PhD 2009	J Banasiak			3 years
Fidele Ciake-Ciake (UND)	PhD 2006	J Banasiak			3 years
Jan Kozakiewicz, (UND)	PhD 2006	J Banasiak			10 years
Virath Singh (UND)	PhD 2002	J Banasiak			4 years
Nabendra Parumasur (UND)	PhD 1998	J Banasiak	J. Mika		4 years
UKZN: P. Singh, E. Kimba Phongi, P. Namayanja, D. Poka, M. Songa, J. Abdalla, M. Nguoma	MSc	J Banasiak	S. Shindin (D.P.) G. Amery (M. Songa)		1-2 years
University of Namibia: E. Lazarus	MSc	J Banasiak	D. liyambo		1 year
University of Stellenbosch: JM Ounana Eloundou, M. Omari	MSc	J Banasiak	I. Rewitzky		2 years
University of Zimbabwe: C. Munogi	MSc	J Banasiak			2 years
African Institute of Mathematical Sciences: A. Saidi, N. Siewe, U. Gaba	MSc	J Banasiak			1 year
Technical University of Łódź: T. Janiszewski, K. Tataradzinski, A. Falkiewicz, E. Miernik, I. Wasiak, P. Wyszomierski, M. Włodarczyk, R. Kaźmierczak, P. Galoch, A. Ligier, M. Kaczmarek, M. Drogosz, A. Błoch, K. Zora	MSc	J Banasiak			1 year
Aboubakari Traore (UKZN)	PostDoc Fellow	J Banasiak			2012-2013
Proscovia Namayanja (UKZN)	PostDoc Fellow	J Banasiak			2013-2014
Joseph Malinzi (UP)	PostDoc Fellow	J Banasiak			2017-2018
Wha-Suck Lee (UP)	PostDoc Fellow (Claude Leon)	J Banasiak			2016-2017

5.2 CURRENT POSTGRADUATE STUDENTS

Name of student	Degree	Project title	Supervisor	Co-super-	Year of
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	enrolled for and date of first registration			visor(s)	registration
David Wetsi Poka	PhD 2019	Fragmentation-coagulation with spatial effects	J. Banasiak	S. Shindin	2
Baaba Ghansah (UKZN)	PhD 2014 Submitted in 2019	Modelling malaria transmission with recrudescence	J Banasiak	F. Chirove	5
Khanyisani Maqele	MSc 2019	Explicit methods of solving differential equations	J. Banasiak		2

5.3 OBTAINING RESEARCH FUNDS *(Optional)*

Origin of research funds <i>(e.g. contract research, THRIP, international funding organisations, other(s))</i>	Title of research project or programme	Duration	Money allocated (R) <i>(Optional - exact amounts not required)</i>
DST/ NRF	SARChI M3B2	2016-2022	3,661,437.45 (2017) 4,321,729.15 (2018)
NRF	Competitive Grant for Rated Researchers "Multiple Scale Nonlocal Phenomena in Natural Sciences" and of the Incentive Funding for Rated Researchers	2014-2016	
Office of Naval Research Global (US)	Grants to support 2013 CIMPA School and 2016 Global change impact on diseases and alien species expansion		
Royal Society /NRF bilateral agreement	Royal Society -NRF bilateral agreement	2006	
Polish Academy of Sciences / NRF	Polish Academy of Sciences - NRF Bilateral Agreement	2006-2007 and 2009-2010	
NRF	Blue Sky Research Grant	2009-2010	
National Centre of Science (Poland)	Infinite dimensional dynamical systems – asymptotics, stability and chaos	2011-2014	
National Centre of Science (Poland)	Mathematical problems in multi-scale approach with applications to the life and social sciences (PI)	2018-2020	
NRF	Knowledge, Interchange and Collaboration (KIC)	2007, 2012, 2013, 2016	

6. RESEARCH OUTPUTS

6.1 PUBLICATIONS IN PEER-REVIEWED OR REFEREED JOURNALS

1. *Some remarks on the renormalization group and Chapman-Enskog type methods in singularly perturbed problems*, *Mathematical Methods in the Applied Sciences*, 2020, DOI: 10.1002/mma.6273
2. *Effective and Ineffective Treatment in a Malaria Model for Children in Endemic Regions*, *Afrika Matematika* <https://doi.org/10.1007/s13370-019-00713-z> (with B.A. Danquah and F.Chirove)
3. *The Discrete Unbounded Coagulation-Fragmentation Equation with Growth, Decay and Sedimentation*, *Kinetic and Related Models*, 12(5), 1069-1092, (with L.O. Joel and S. Shindin)
4. *Global solutions of continuous coagulation--fragmentation equations with unbounded coefficients*, *Discrete and Continuous Dynamical Systems – S*, on-line, 10.3934/dcdss.2020161
5. *Canard solutions in equations with backward bifurcations of the quasi-steady state manifold*, *Journal of Mathematical Analysis and Applications*, 2019, 471(1-2), pp. 776-795 (with M.S. Seuneu Tchamga, K. Szymańska-Dębowska).
6. *On a three-stage structured model for the dynamics of malaria transmission with human treatment, adult vector demographics and one aquatic stage*, *Journal of Theoretical Biology*, 481, 21 November 2019, Pages 202-222 , <https://doi.org/10.1016/j.jtbi.2018.12.043>, (with Gideon A.Ngwa, Miranda I.Teboh-Nwungkem, Yves Dumont, Rachid Ouifki)
7. *Long term dynamics of the discrete growth-decay-fragmentation equation*, *Journal of Evolution Equations*, 19 (2019), 771–802 <https://doi.org/10.1007/s00028-019-00499-4> (with L.O. Joel and S. Shindin)
8. *Population models with projection matrix with some negative entries - a solution to the Natchez paradox*, *Bulletin of the South Ural State University, Series: Mathematical Modelling, Programming and Computer Software*, 2018, 11(3), 18-28
9. *Causal relations in support of implicit evolution equations*, *Bulletin of the South Ural State University, Series: Mathematical Modelling, Programming and Computer Software*, 2018, 11(3), pp. 85-102 (with Sauer, N., Lee, W.-S.)
10. *Analytic fragmentation semigroups and classical solutions to coagulation--fragmentation equations - a survey*, *Acta Mathematica Sinica, (English Series)*, 35(1), pp. 83-104, doi.org/10.1007/s10114-018-7435-9.
11. *Generalized network transport and Euler-Hille formula*, *Discrete and Continuous Dynamical Systems-B*, (23) 5, 2018, 1873–1893, [doi:10.3934/dcdsb.2018185](https://doi.org/10.3934/dcdsb.2018185) (with A. Puchalska).
12. *Analysis and Simulations of the Discrete Fragmentation Equation with Decay*, *Mathematical Methods in the Applied Sciences*, (with L.O. Joel and S. Shindin), published online, [doi: 10.1002/mma.4666](https://doi.org/10.1002/mma.4666)
13. *Delayed stability switches in singularly perturbed predator-prey models*, *Nonlinear Analysis: Real World Applications*, 35, (2017), 312-335 [doi:10.1016/j.nonrwa.2016.10.013](https://doi.org/10.1016/j.nonrwa.2016.10.013) (with M. S. Seuneu Tchamga)
14. *A Singular Limit for an Age Structured Mutation Problem*, *Mathematical Biosciences and Engineering*, 14(1), (2017), 17-30 (with A. Falkiewicz)
15. *Kinetic models for crowd dynamics. Comment on "Human behaviours in evacuation crowd dynamics: From modelling to "big data" toward crisis management" by N. Bellomo et al.*, *Physics of Life Reviews*, 18 (2016), 22-24, [doi: 10.1016/j.plrev.2016.07.008](https://doi.org/10.1016/j.plrev.2016.07.008)
16. *Explicit formulae for limit periodic flows on networks*, *Linear Algebra and Applications*, 500, (2016), 30-42
17. *Kinetic models - mathematical models of everything? Comment on "Collective learning modeling based on the kinetic theory of active particles" by D. Burini et al.* *Physics of Life Reviews*, 16, (2016), 140-141, [doi: 10.1016/j.plrev.2016.01.005](https://doi.org/10.1016/j.plrev.2016.01.005)
18. *Asymptotic state lumping in transport and diffusion problems on networks*, *Mathematical Models and Methods in Applied Sciences*, 26, No. 2 (2016) 215-247 (jointly with A. Falkiewicz and P. Namayanja),
19. *Semigroup approach to diffusion and transport problems on networks*, *Semigroup Forum*, 93(3) (2016) 427 - 443 (jointly with A. Falkiewicz and P. Namayanja), DOI [10.1007/s00233-015-9730-4](https://doi.org/10.1007/s00233-015-9730-4).
20. *Some transport and diffusion processes on networks and their graph realizability*, *Applied Mathematics Letters*, 45, (2015), 25-30, [doi:10.1016/j.aml.2015.01.006](https://doi.org/10.1016/j.aml.2015.01.006) (jointly with A. Falkiewicz).
21. *Multi-scale problems in complex domains -- a mathematical framework for systems biology. Comment on "On the Interplay between Mathematics and Biology Hallmarks Toward a New Systems Biology" by N. Bellomo, A. Elaiw, A. M. Althiabi and M. A. Alghamdi*, *Physics of Life Reviews*, 12, (2015), 65-67, [doi:10.1016/j.plrev.2015.01.004](https://doi.org/10.1016/j.plrev.2015.01.004).

22. *Canard-type solutions in epidemiological models*, Discrete Contin. Dyn. Syst. 2015, Dynamical systems, differential equations and applications, 10th AIMS Conference, Suppl., 85--93. (jointly with E. Kimba Phongi).
23. *Solvability of Age Structured Epidemiological Models with Intracohort Transmission*, Mediterranean Journal of Mathematics, **12**, (2015) 1307–1321, (with R. Y. M’pika Massoukou), DOI 10.1007/s00009-015-0556-9,
24. *A semigroup related to a convex combination of boundary conditions obtained as a result of averaging other semigroups*, Journal of Evolution Equations, **15** (1), (2015), 223-237 (with A. Bobrowski).
25. *Kinetic Models in Natural Sciences*, in: J. Banasiak and M. Mokhtar-Kharroubi (eds.), *Evolutionary Equations with Applications in Natural Sciences*, Lecture Notes in Mathematics, Vol. 2126, Springer, Heidelberg, 2015, 133-198.
26. *Singularly perturbed population models with reducible migration matrix 1. Sova-Kurtz theorem and the convergence to the aggregated model*. *Discrete Contin. Dyn. Syst.-B*, **35** no. 2, 617–635 (with A. Goswami).
27. *A singularly perturbed age structured SIRS model with fast recovery*, Discrete Cont. Dyn. Syst. –B, **19** (8), (2014), 2383-2399, (with R. Y. M’pika Massoukou).
28. *Asymptotic behaviour of flows on reducible networks*, Netw. Heterog. Media **9** (2014), no. 2, 197–216 (with P. Namayanja)
29. *Pseudospectral Laguerre approximation of transport-fragmentation equations*. *Appl. Math. Comput.* **239** (2014), 107–125 (with N.Parumasur, W. Poka, S.Shindin)
30. *On the existence of moments of solutions to fragmentation equations*, Journal of Mathematical Analysis and Applications, **413**(2), (2014), 1017-1029, (with W. Lamb)
31. *Singularly Perturbed Population Models with Reducible Migration Matrix: 2. Asymptotic Analysis and Numerical Simulations*, Mediterranean Journal of Mathematics, **11**(2) (2014), 533–559, (with A. Goswami, S. Shindin).
32. *On a macroscopic limit of a kinetic model of alignment*, Mathematical Models and Methods in Applied Sciences, **23**(14), (2013), 2647–2670 (with M. Lachowicz).
33. *A singularly perturbed SIS model with age structure*, Mathematical Biosciences and Engineering, **10**(3), (2013), 499-521, (with E. Kimba Phongi and M. Lachowicz)
34. *Strong fragmentation and coagulation with power-law rates*, Journal of Engineering Mathematics, **82**, (2013), 199-215 (with W. Lamb and M. Langer)
35. *Relative entropy and discrete Poincaré inequalities for reducible matrices*, Applied Mathematics Letters, **25**(12), (2012), 2193-2197, doi:10.1016/j.aml.2012.06.001, (with P. Namayanja)
36. *Asynchronous Exponential Growth of a General Structured Population Model*, Acta Applicandae Mathematicae, **119**, (2012), 149–166 (with K. Pichór, R. Rudnicki)
37. *Analytic fragmentation semigroups and continuous coagulation–fragmentation*, J. Math. Anal. Appl., **391** (2012) 312–322 (with W. Lamb)
38. *The discrete fragmentation equation: semigroup, compactness and asynchronous exponential growth*, Kinetic and Related Models, **5**(2), (2012), 223—236 (with W. Lamb)
39. *Transport processes with coagulation and strong fragmentation*, *Discrete and Continuous Dynamical Systems - Series B* **17** (2), (2012), 445-472
40. *Global classical solutions of coagulation-fragmentation equations with unbounded coagulation rates*, Nonlinear Analysis: Real World applications, **13**,(2012), 91-105, DOI: 10.1016/j.nonrwa.2011.07.016
41. *Global strict solutions to continuous coagulation-fragmentation equations with strong fragmentation*, Proceedings of the Royal Society of Edinburgh: Section A Mathematics, **141** (3), (2011), 465-480 (with W. Lamb).
42. *On an irregular dynamics of certain fragmentation semigroups*, Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas, **105**, (2011) DOI: 10.1007/s13398-011-0015-9, 61–377.
43. *Blow-up of solutions to some coagulation and fragmentation equations with growth*, Discrete and Continuous Dynamical Systems, Supplement 2011, 126-134.
44. *Multiscale approach in mathematical biology Comment on “Toward a mathematical theory of living systems focusing on developmental biology and evolution: A review and perspectives” by Bellomo and Carbonaro*, Physics of Life Reviews, **8** (2011), 19-20 (with M. Lachowicz)
45. *Aggregation in age and space structured population models: an asymptotic analysis approach*, J. Evol. Equ., **11** (2011), 121–154 (with S. Shindin and A. Goswami)
46. *Chaos in Kolmogorov systems with proliferation – general criteria and applications*, Journal of

- Mathematical Analysis and Applications, 378 (2011) 89–97.
47. *On general transport equation with abstract boundary conditions. The case with divergence free force field*, Mediterranean Journal of Mathematics, 8 (2011), 1–35, (with L. Arlotti and B. Lods)
 48. *Dynamics of the birth-and-death process with proliferation -- stability and chaos*, Discrete and Continuous Dynamical Systems-A, 29 (1), (2011), 61-79, (with M. Moszyński)
 49. *Chapman-Enskog asymptotic procedure in structured population dynamics*, Il Nuovo Cimento, 33 (1), (2010), 31-38, (with S. Shindin)
 50. *Nonautonomous fragmentation equation via evolution semigroups*, Mathematical Methods in the Applied Sciences, 33, (2010), 1201-1210 (with L. Arlotti),
 51. *Controlling number of particles in fragmentation*, Physica D, 239 (2010) 1422-1435, (with S.C. Oukouomi Noutchie)
 52. *Global solvability of a fragmentation-coagulation equation with growth and restricted coagulation*, Journal of Nonlinear Mathematical Physics, 16 (supp. 01), (2009), 16-32, (with S.C. Oukoumie Noutchie and R. Rudnicki)
 53. *Conservativeness in nonlocal fragmentation models*, Mathematical and Computer Modeling, 50, (2009), 1229-1236 (with S.C. Oukouomi Noutchie)
 54. *Interplay between degenerate convergence of semigroups and asymptotic analysis: a study of a singularly perturbed abstract telegraph system*, Journal of Evolution Equations, 9, (2009), 293–314 (with A. Bobrowski)
 55. *A new approach to transport equations associated to a regular fields: trace results and well-posedness*, Mediterranean Journal of Mathematics, 6(4) (2009), 367-402 , (with L. Arlotti and B. Lods)
 56. *Coagulation, Fragmentation and Growth Processes in a Size Structured Population*, Discrete and Continuous Dynamical Systems, Series-B, 11 (3), (2009) , 563–585 (with W. Lamb)
 57. *Chaotic linear systems in mathematical biology*, South African Journal of Science, **104**, May/June 2008, 173-179.
 58. *Hypercyclicity and chaoticity spaces of semigroups*, Discrete and Continuous Dynamical Systems, Series-A, 20(3), (2008), 577-587, (with M. Moszynski)
 59. *Positivity in natural sciences. in: Multiscale problems in the life sciences*, Springer Lecture Notes in Math., 1940, 2008, 1-89.
 60. *On transport equations driven by a non-divergence free force field*, 30, (2007), 2155-2177, Mathematical Methods in the Applied Sciences, (with L. Arlotti & B. Lods).
 61. *Challenges in the Numerical Solutions for Models in Transport Theory*, Transport Theory and Statistical Physics, 36(1-3), (2007), 67–78, (with J. Kozakiewicz & N. Parumasur).
 62. *Around the Kato generation theorem for semigroups*, Studia Mathematica, 179(3), (2007), 217–238, (with M. Lachowicz).
 63. *Chaotic behavior of semigroups related to the process of gene amplification–deamplification with cells’ proliferation*, Mathematical Biosciences, 206, (2007), 200–215. (with M. Lachowicz i M. Moszynski),
 64. *Kinetic-type models with diffusion - conservative and non-conservative solutions*, Transport Theory and Statistical Physics, 36(1-3), (2007), 43-65.
 65. *On a Coagulation and Fragmentation Equation with Mass Loss*, Proceedings of the Royal Society of Edinburgh, 136A, (2006), 1157-1173, (with W. Lamb).
 66. *Shattering and non-uniqueness in fragmentation models – an analytic approach*, Physica D, 222(1- 2), (2006), 63-72.
 67. *On well-posedness of the spatially inhomogeneous linear Boltzmann equation of semiconductor theory*, Mathematical Models and Methods in Applied Sciences, 16 (9), (2006), 1441-1468, (with L. Arlotti i F. Ciake-Ciake).
 68. *Semigroups for generalized birth–and–death equations in l^p spaces*, Semigroup Forum 73(2), (2006), 175–193, (with M. Lachowicz & M. Moszynski).
 69. *A generalization of Desch–Schappacher–Webb criteria for chaos*, Discrete and Continuous Dynamical Systems –A, 12(5), (2005), 959-972 (with M. Moszynski).
 70. *Diffusion Approximation of Linear Kinetic Equations with Non-equilibrium Data – Computational Experiments*, Transport Theory and Statistical Physics, 34(6), (2005), 475-496, (with J. M. Kozakiewicz and N. Parumasur).
 71. *Birth-and-death systems with parameter and chaotic dynamics in some linear kinetic systems*, Zeitschrift für Analysis und ihre Anwendungen, 24(4), (2005), 675–690.
 72. *Chaotic linear dynamical systems: theory and applications*. (Polish) Wiadom. Mat. 41 (2005), 51--79.
 73. *Conservative and shattering solutions for some classes of fragmentation models*, Mathematical Models

- and Methods in Applied Sciences, 14, (2004), 483–501.
74. *Strictly substochastic semigroups with application to conservative and shattering solutions to fragmentation equations with mass loss*, Journal of Mathematical Analysis and Applications, 293 (2) (2004), 693–720 (with L. Arlotti).
 75. *On conservativity and shattering for an equation of phytoplankton dynamics*, C. R. Biologies, 327 (2004), 1025–1036.
 76. *Universality of dishonesty of substochastic semigroups: shattering fragmentation and explosive birth-and-death processes*, Discrete and Continuous Dynamical Systems –B, 5(3), (2004), 529–542, (with M. Mokhtar-Kharroubi).
 77. *Multiple solutions to linear kinetic equations*, Transport Theory and Statistical Physics, 38 (2003), 381–398.
 78. *Topological chaos: when topology meets medicine*, Applied Mathematics Letters, 16, 2003, 303–308, (with M. Lachowicz i M. Moszynski).
 79. *Solvability of linear kinetic equations with multi-energetic inelastic scattering*, Reports on Mathematical Physics, 52 (2) (2003), 235–253, (with M. Groppi).
 80. *On well-posedness of a Boltzmann like semiconductor model*, Mathematical Models and Methods in Applied Sciences, 13 (6), (2003), 875–892.
 81. *On the application of the substochastic semigroup theory to fragmentation models with mass loss*, Journal of Mathematical Analysis and Applications, 284 (1) (2003), 9–30 (with W. Lamb)
 82. *On a non-uniqueness in fragmentation models*, Mathematical Methods in the Applied Sciences, 25, (2002), 541-556
 83. *Interplay of elastic and inelastic scattering operators in extended kinetic models and their hydrodynamic limits: reference manual*. Transport Theory Statist. Phys. 31 (2002), no. 3, 187-248, (with G.Frosali G and G.Spiga)
 84. *Topological chaos for birth-and-death-type models with proliferation*. Math. Models Methods Appl. Sci. 12 (2002), no. 6, 755-775. (with M. Lachowicz).
 85. *B-bounded semigroups and C-existence families*. Taiwanese J. Math. 6 (2002), no. 1, 105-125, (with Singh V).
 86. *Chaotic linear dynamical systems with applications. Semigroups of operators: theory and applications (Rio de Janeiro, 2001)*, 32--44, Optimization Software, New York, 2002 (with M. Lachowicz).
 87. *Space homogeneous solutions of the linear Boltzmann equation for semiconductors: a semigroup approach*. "WASCOM 2001"---11th Conference on Waves and Stability in Continuous Media (Porto Ercole), 34--40, World Sci. Publ., River Edge, NJ, 2002 (with G. Frosali and F. Mugelli).
 88. *On an extension of the Kato-Voigt perturbation theorem for substochastic semigroups and its application*, Taiwanese J. Math. 5 (2001), no. 1, 169--191
 89. *On the hydrodynamic limit of a linear kinetic equation with dominant elastic scattering*. Atti Sem. Mat. Fis. Univ. Modena 49 (2001), no. 1, 221—245.
 90. *On the existence of propagators in stationary Wigner equation without velocity cut-off*. Transport Theory Statist. Phys. 30 (2001), no. 7, 659—672 (with L. Barletti)
 91. *Chaos for a class of linear kinetic models*, C. R. Acad. Sci. Paris, t. 329, Serie IIB, (2001), 439-444. (with M. Lachowicz).
 92. *B-bounded semigroups and implicit evolution equations*. Abstr. Appl. Anal. 5 (2000), no. 1, 13-32
 93. *Diffusion approximation of an inelastic scattering model in linear kinetic theory*. Adv. Math. Sci. Appl. 10 (2000), no. 1, 375-397.
 94. *B-bounded semigroups, existence families and implicit evolution equations. Semigroups of operators: theory and applications (Newport Beach, CA, 1998)*, 25--34, 42, Birkhäuser, Basel, 2000.
 95. *Mathematical properties of inelastic scattering models in linear kinetic theory*. Math. Models Methods Appl. Sci. 10 (2000), no. 2, 163-186
 96. *On a diffusion-kinetic equation arising in extended kinetic theory*. Math. Methods Appl. Sci. 23 (2000), no. 14, 1237-1256
 97. *Stability of linear dynamical systems: modern versions of Lyapunov's theorem or the history of four numbers*. (Polish) Wiadom. Mat. 36 (2000), 23-44.
 98. *The existence of moments of solutions to transport equations with inelastic scattering and their application in the asymptotic analysis*. J. Appl. Anal. 6 (2000), no. 2, 187-211
 99. *Inelastic scattering models in transport theory and their small mean free path analysis*. Math. Methods Appl. Sci. 23 (2000), no. 2, 121—145, (with G. Frosali and G. Spiga).
 100. *Asymptotic analysis for a particle transport equation with inelastic scattering in extended kinetic theory*,

- Mathematical Models and Methods Applied Sciences, 8 (5) (2000) 851-874. (with G. Frosali and G. Spiga).
101. *Remarks on the solvability of the inhomogeneous abstract Cauchy problem for linear and semilinear evolution equations.* *Quaest. Math.* 22 (1), (1999), 83—92.
 102. *Diffusion approximations of a linear kinetic equation with inelastic scattering: asymptotic analysis and numerical results.* *Transport Theory Statist. Phys.* 28 (1999), no. 5, 475—498 (with L. Demeio).
 103. *Quasi-steady-state solutions of kinetic equations in runaway regime.* *Transport Theory Statist. Phys.* 28(1) (1999) 1--29. (with L. Demeio).
 104. *Generation results for B-bounded semigroups,* *Annali di Matematica Pura ed Applicata, (IV), Vol. CLXXIV,* (1998), 307-323
 105. *Spectral theorems of Voigt type for linear Boltzmann equation with external field.* *Transport Theory Statist. Phys.* 27 (1998), no. 3-4, 241--255.
 106. *Asymptotic analysis for a particle transport equation with inelastic scattering in extended kinetic theory.* *Math. Models Methods Appl. Sci.* 8 (1998), no. 5, 851--874. (with G. Frosali and G. Spiga).
 107. *Singularly perturbed telegraph equations with applications in the random walk theory.* *J. Appl. Math. Stochastic Anal.* 11 (1998), no. 1, 9--28. (with J. Mika)
 108. *Diffusion approximation for the linear Boltzmann equation of semiconductor theory with analysis of the initial layer.* *J. Math. Anal. Appl.* 205 (1997), no. 1, 216-238.
 109. *Some spectral properties of the linear Boltzmann equation of semiconductor theory with application to its asymptotic analysis.* *Proceedings of the Prague Mathematical Conference 1996, 7--12, Icaris, Prague,* 1997.
 110. *Singularly perturbed linear and semilinear hyperbolic systems: kinetic theory approach to some folk theorems,* *Acta Applicandae Mathematicae,* 49 (2), (1997), 199-228.
 111. *Asymptotic analysis of abstract linear kinetic equations.* *Math. Methods Appl. Sci.* 19 (1996), no. 6, 481-505.
 112. *Asymptotic analysis of a model kinetic equation.* *Math. Models Methods Appl. Sci.* 5 (1995), no. 7, 867—885 (with J.R. Mika).
 113. *Remark on a trace theorem for transmission problems.* *Math. Methods Appl. Sci.* 18 (1995), no. 5, 413--421. (with A. Ligier).
 114. *Diffusion limit for a linear kinetic equation.* *Transport Theory Statist. Phys.* 24 (1995), no. 1-3, 41--53.
 115. *Domains of fractional powers of operators arising in mixed boundary value problems in non-smooth domains and applications.* *Appl. Anal.* 55 (1994), no. 1-2, 79—89.
 116. *Diffusion limit for the linear Boltzmann equation of the neutron transport theory.* *Math. Methods Appl. Sci.* 17 (1994), no. 13, 1071—1087 (with J.R. Mika).
 117. *Asymptotic analysis of the Fokker-Planck equation related to Brownian motion.* *Math. Models Methods Appl. Sci.* 4 (1994), no. 1, 17--33. (with J.R. Mika).
 118. *On regularity of solutions to inner obstacle problems.* *Z. Anal. Anwendungen* 12 (1993), no. 3, 401--404. (with J. Szczępaniak).
 119. *A counterexample in the theory of mixed boundary value problems for elliptic equations in nonsmooth domains.* *Demonstratio Math.* 26 (1993), no. 2, 327--335
 120. *On asymptotics of solutions of elliptic mixed boundary value problems of second-order in domains with vanishing edges.* *SIAM J. Math. Anal.* 23 (1992), no. 5, 1117-1124
 121. *On L²-solvability of mixed boundary value problems for elliptic equations in plane nonsmooth domains.* *J. Differential Equations* 97 (1992), no. 1, 99-111
 122. *On corner singularities of solutions to mixed boundary-value problems for second-order elliptic and parabolic equations.* *Proc. Roy. Soc. London Ser. A* 433 (1991), no. 1887, 209-217 (with G.F.R Roach).
 123. *On mixed boundary value problems of Dirichlet oblique-derivative type in plane domains with piecewise differentiable boundary.* *J. Differential Equations* 79 (1989), no. 1, 111-131 (with G.F.R Roach).
 124. *Some contribution to the geometry of normed linear spaces.* *Math. Nachr.* 139 (1988), 175--184.
 125. *Remarks on orthogonality in normed linear spaces.* *Zeszyty Nauk. Politech. Łódź. Mat.* 20 (1988), 39--43.
 126. *On some class of uniqueness of solutions of distributional boundary problems for the Laplace equation in a half space.* *Zeszyty Nauk. Politech. Łódź. Mat.* No. 17 (1984), 31--42.

6.2 BOOKS AND/OR CHAPTERS IN BOOKS

BOOKS

1. *Analytic Methods for Coagulation-Fragmentation Models*, CRC Press, 2019, (with W. Lamb and P. Laurençot).
2. *Evolutionary Equations with Applications in Natural Sciences*, Lecture Notes in Mathematics, Vol. 2126, Springer, Heidelberg, 2015 (edited jointly with M. Mokhtar-Kharroubi)
3. *Semigroups of Operators -Theory and Applications. Będlewo, Poland, October 2013*, Springer Proceedings in Mathematics & Statistics, Vol. 113, Heidelberg, 2015, (edited jointly with A. Bobrowski, and M. Lachowicz)
4. *Methods of Small Parameter in Mathematical Biology*, Birkhäuser, Heidelberg, 2014, (with M. Lachowicz)
5. *Difference and Differential Equations in Mathematical Modelling. One-Dimensional Problems*. Cambridge University Press, Cambridge, 2013.
6. *Selected problems in mathematical methods of population theory and ecology*, TUL Publishing House, Łódź, 2011 (in Polish).
7. *Multiple scales problems in Biomathematics, Mechanics, Physics and Numerics*, GAKUTO International Series Math.Sci. Appl. Vol. 31 (2009) (edited jointly with A. Abdulle, A. Damlamian and M. Sango).
8. *Multiscale Problems in the Life Sciences From Microscopic to Macroscopic*, Lecture Notes in Mathematics, Vol. 1940, 2008 (jointly with V. Capasso, M.A.J. Chaplain, M. Lachowicz and J. Mięksisz.)
9. *Perturbations of Positive Semigroups with Applications*, Springer Verlag, 2006, (jointly with z L. Arlotti).
10. *Singularly perturbed evolution equations with applications to kinetic theory*. Series on Advances in Mathematics for Applied Sciences, 34. World Scientific Publishing Co., Inc., River Edge, NJ, 1995. (jointly with J. R. Mika).

CHAPTERS

1. *Transport on Networks—A Playground of Continuous and Discrete Mathematics in Population Dynamics*, in: Frank T. Smith, Hemen Dutta and John N. Mordeson (eds), *Mathematics Applied to Engineering, Modelling, and Social Issues*, pp 439-487, Springer, Cham, ISBN: Print 978-3-030-12231-7, Online 978-3-030-12232-4, DOI <https://doi.org/10.1007/978-3-030-12232-4> (with A. Puchalska)
2. *Aggregation Methods in Analysis of Complex Multiple Scale Systems*, in Priscilla Mensah et al (Eds) *SYSTEMS ANALYSIS APPROACH FOR COMPLEX GLOBAL CHALLENGES*, Springer 2018, pp 249-276, https://doi.org/10.1007/978-3-319-71486-8_13 (with A. Falkiewicz and M. S. Seuneu Tchamga)
3. *Singularly perturbed systems with non-isolated limit manifolds and applications*, in A. Bartłomiejczyk (Ed.) *Metody Matematyczne w Zastosowaniach*, Monograph of the Centre of Applications of Mathematics, vol. 3, (2015) 1-20, (in Polish).
4. *Chaos in some linear kinetic models*. "WASCOM 2003"---12th Conference on Waves and Stability in Continuous Media, 32--37, *World Sci. Publ., River Edge, NJ, 2004*.
5. *Singular perturbations of resonance type with applications to the kinetic theory*. *Recent developments in evolution equations (Glasgow, 1994)*, 53--67, *Pitman Res. Notes Math. Ser.*, 324, *Longman Sci. Tech., Harlow, 1995*.
6. *Asymptotic analysis of singularly perturbed dynamical systems of kinetic type*, in: *Multiple scales*

problems in Biomathematics, Mechanics, Physics and Numerics, 219-254, GAKUTO International Series Math.Sci. Appl. Vol. 31 (2009)

6.3 PUBLISHED FULL-LENGTH CONFERENCE PAPERS/KEYNOTE ADDRESSES

Between real life, mathematical model and its analysis; what can go wrong?
Not. S. Afr. Math. Soc. 40 (2009), no. 1, 3–28.

6.4 NON-REFEREED PUBLICATIONS OR POPULAR ARTICLES

1. Foreword to BIOMATH 2017 Proceedings: Some comments on mathematical modelling and biomathematics., DOI: [10.11145/texts.2018.06.107](https://doi.org/10.11145/texts.2018.06.107)
2. A tribute to Professor Janusz Mika on the occasion of his 70th birthday.
3. Transport Theory Statist. Phys. 36 (2007), no. 4-6, 249–251.
4. Preface [Special issue: Differential equations and symmetries with applications].
5. Math. Methods Appl. Sci. 30 (2007), no. 16, 1979–1981 (with S. Moyo).
6. Preface [Special issue: Evolution equations in applications]. Math. Methods Appl. Sci. 27 (2004), no. 6, 623–625.
7. From the guest editors [Special issue on Mathematical Methods in Systems Biology and Population Dynamics]. Math. Biosci. Eng. 10 (2013), no. 3, i–ii.(with U.Ledzewicz, A. Friedman, H. Schättler, and E. Lungu, Edward)
8. Jacek Jachymski , Wiadomosci Matematyczne Tom 49, Nr 2 (2013)
9. Adam Bobrowski, Wiadomosci Matematyczne, Tom 49, Nr 1 (2013)

6.5 PATENTS

6.6 TECHNICAL REPORTS

7. OTHER SCHOLARLY RESEARCH-BASED CONTRIBUTIONS

7.1 PARTICIPATION IN CONFERENCES, WORKSHOPS AND SHORT COURSES - SPECIFY TYPE OF CONTRIBUTION

Invited and plenary lectures and courses from 2002

1. Fragmentation Equations with Mass Loss - Existence and Uniqueness of Solutions, 3rd Partial Differential Equation Forum, Będlewo, Poland, June 2002,
2. Strictly substochastic semigroups and conservative and shattering solutions to fragmentation equations with mass loss, Workshop: "Differential Equations in Biology and Medicine", Będlewo, Poland, September 2003

3. Positivity in applied sciences, Banach Centre / CIME Course and Workshop: FROM A MICROSCOPIC TO A MACROSCOPIC DESCRIPTION OF COMPLEX SYSTEMS, Bedlewo, Poland, 2006
4. Chaotic linear dynamical systems in mathematical biology, UCT Conference on Biomathematics in Africa 2007, Cape Town, SA, 2007
5. Asymptotic analysis of singularly perturbed dynamical systems, CIMPA-UNESCO-SOUTH AFRICA SCHOOL: Multiple scale problems in Biomathematics, Mechanics, Physics and Numerics, AIMS, Muizenberg (South Africa), August 2007
6. Coagulation, Fragmentation and Growth Processes in Size Structured Population, Workshop on Coagulation and Fragmentation Models, Oberwolfach (Germany), September 2007
7. Positivity, phase transitions and multiple solutions in linear dynamical systems: between modelling and mathematical analysis, Evolution Equations in Pure and Applied Sciences, Florence (Italy), April 2008
8. Interplay between asymptotic analysis and degenerate convergence of semigroups, 7th Forum Partial Differential Equations Forum, Bedlewo (Poland), June 2008
9. Asymptotic analysis of multi-structured population models, International Conference on Numerical and Applied Mathematics ICNAM 2008, Kos (Greece), September 2008
10. Between real life, mathematical model and its analysis: what can go wrong? 51st Annual Congress of South African Mathematical Society, 5 - 7 November 2008, Durban
11. Chaotic and sub-chaotic systems related to birth-and-death type problems, Hypercyclicity and Chaos for Linear Operators and Semigroups, Valencia, Spain, June 1-5, 2009
12. Modelling with infinite dimensional dynamical systems - some unexpected pitfalls, 7th Pan African Congress of Mathematicians, Yamoussoukro, Ivory Coast, 3rd-8th August 2009
13. Long time behaviour of discrete fragmentation - from exponential stability to chaos, AIMS 8th International Conference on Dynamical Systems, Differential Equations and Applications, Special Session on Operator Semigroups and Applications, Dresden, May 2010
14. Chaos (and stability) in systems driven by infinite Kolmogorov matrices with proliferation, International Functional Analysis Meeting, Valencia, 7-11 June, 2010
15. Singularly Perturbed McKendrick type population models, Kinetic Theory and Multiscale Phenomena: Modelling, Analysis, Computation and New Applications, 27th - 30th August, 2010 Kruger National Park, South Africa
16. Size-structured population models with coagulation and fragmentation, Partial Differential Equations in Mathematical Biology, Bedlewo (Poland), 12-17 September 2010
17. Aldo Belleni Morante and B-bounded semigroups, Aldo Belleni Morante – Scienziato e Maestro, Florence, 26 November 2010
18. Singularly perturbed structured McKendrick population models, Asymptotics of Operator Semigroups, CIRM, Lumigny (Marseille) 11-15 April 2011
19. *A short tutorial on the Tikhonov theorem*, Biologically inspired mathematics, Kazimierz Dolny, Poland, April 28, 2011
20. Asymptotic behaviour of structured population models, Modelling and Simulation in Population Biology, CIMPA-UNESCO-MICINN-SOUTH AFRICA Research School, AIMS, 6-9 June 2011
21. Singularly perturbed models in structured population dynamics, XVIII National Conference on Applications of Mathematics in Biology and Medicine, Krynica Morska, Poland, 23-27 September 2012
22. Methods of small parameter in natural sciences (plenary), 8th Pan African Congress of Mathematics, Abuja, 30 June -8 July 2013
23. Kinetic type models in applied sciences, CIMPA-UNESCO SCHOOL 'EVOLUTIONARY EQUATIONS WITH APPLICATIONS IN NATURAL SCIENCES', Muizenberg, South Africa, from 22nd July to 2nd August 2013
24. Singularly perturbed equations in age-structured epidemiology, Mathematics, Mechanics and Modeling, a tribute to Zbigniew Peradzynski, joint with 13th Conference Mathematics in Technical and Natural Sciences, Bedlewo, Poland, 22.09.2013 - 27.09.2013
25. Asymptotic properties of transport and diffusion semigroups on networks, International Conference on Operator Theory ICOT-2014, 28 April - 01 May, 2014, Hammamet, Tunisia
26. Problems on networks and their generalizations – well-posedness, identification and singular limits, 17th ISEM Workshop, Blaubeuren, Germany, 22-28.06.2014
27. Osobliwie zaburzone układy równań z niezolowanymi rozmaitościami granicznymi i ich zastosowania, 2g Konferencja „Między teorią a zastosowaniami – matematyka w działaniu”, Będlewo, 25-30.08.2014

28. Dynamical systems on networks: well-posedness, graph realizability and asymptotic state lumping, Part I Diffusion processes, School-Workshop, Evolution equations: theory and applications, Besançon, 23rd-27th March 2015
29. Singularly perturbed systems with non-isolated limit manifolds and applications in mathematical biology, SANUM Conference, Pretoria, 30 March-1 April 2015
30. Analyticity of fragmentation semigroups with applications, Special Session on Cluster Evolution Equations Coagulation, Fragmentation, and Related Systems, AMS/EMS/SMP International Meeting, Porto, Portugal 10-13 June 2015
31. Some discrete models in population dynamics and ecology, 20th International Conference on Difference Equations and Applications, Białystok, Poland, 19-25 July 2015
32. Mathematical Models in Population Dynamics, CIMPA School: Mathematical modeling and analysis of complex systems, Naivasha, Kenya, 20-31 July 2015.
33. Classical solutions of coagulation-fragmentation equations, Kinetic Theory and Multiscale Phenomena: Modelling, Analysis, Computation and New Applications, Stellenbosch, 22-25.01.2016
34. Dynamical systems on networks - on the crossroads of discrete and continuous mathematics, ASSAf-Leopoldina-Humboldt Foundation Symposium *Partial Differential Equations and Applications*, STIAS, Stellenbosch, South Africa, 9-11 March 2016
35. Basic Mathematical Models in Epidemiology and Species Invasion, a minicourse at Global change impact on diseases and alien species expansion: a capacity building workshop, AIMS, Cape Town, May 2-6 2016
36. Methods of Small Parameter in Life Sciences, public lecture, XXII National Conference on Applications of Mathematics in Biology and Medicine, Sandomierz, Poland, 5-9.09.2016
37. Fragmentation-coagulation equations with diffusion, invited lecture, International Conference on Mathematical Analysis and its Applications, Roorkee, India, 28 Nov-2 Dec 2016.
38. Dynamical systems on networks - on the crossroads of discrete and continuous mathematics, plenary lecture, International Conference on Recent Advances in Theoretical and Computational Partial Differential Equations with Applications, Panjab University, Chandigarh, India, 5 Dec-9 Dec 2016.
39. Multiple scale models in epidemiology, DFG-AIMS workshop on Mathematics against Malaria: A Holistic Approach, Douala, Cameroon, 20-24 February 2017
40. Analytic fragmentation semigroups and discrete coagulation-fragmentation processes with growth, Workshop "Coagulation and Fragmentation Equations", Wolfgang Pauli Institute (WPI) Vienna, Austria, 23 Mar-24 Mar 2017,
41. *Dynamical Bifurcations and Singularly Perturbed Systems of Equations*, XXX Anniversary of the Institute of Applied Mathematics and Mechanics of the University of Warsaw, Warsaw, Poland, 20-22 April 2017
42. Size structured population models -Dynamics of organisms' groupings, BIOMAT2017, Skukuza, South Africa, 25-30 June 2017
43. Partial differential equations and semi-groups, Discrete fragmentation models with growth and decay - recent results, Besançon (France), December 11th to December 14th, 2017.
44. Structured population dynamics – patches and networks, DFG-AIMS Workshop “EVOLUTIONARY PROCESSES ON NETWORKS” AIMS Rwanda, 20 March-24 March 2018
45. Discrete Coagulation-Fragmentation Processes with Growth and Decay, Coagulation-Fragmentation Equations and Semigroups: A meeting in Honour of Wilson Lamb, Glasgow, 23rd May, 2018
46. How to be positive in natural sciences? (plenary) Positivity X, Pretoria, 8-12 July 2019
47. Some positivity tools in semigroup theory, Functional Analysis and its Applications, NWU Mathematics Workshop 2019, 25-27 September 2019, North West University, Potchefstroom

7.2 TEAMWORK AND COLLABORATION WITH OTHERS:

7.2.1 *Other researchers (national and international)*

S. Shindin (UKZN), A. Bobrowski (Lublin, Poland), M. Lachowicz (Warsaw, Poland), M. Mokhtar-Kharroubi (Besancon, France), W. Lamb, M. Langer (Strathclyde, UK), P. Laurencot (Toulouse, France)

7.2.2 *Other research institutions (national and international)*

Technical University of Łódź, Poland
South Ural State University, Chelyabinsk, Russia
Strathclyde University, Glasgow, UK
University of Warsaw, Poland

7.2.3 *Industry*

7.3 MEMBERSHIP IN NATIONAL AND INTERNATIONAL BODIES

Vice-President of the South African Mathematical Society, 2001-2005

Chairman of the South African National Committee for International Mathematical Union, 2005-2009.

SA delegate at the International Mathematical Union Congress in Madrid in 2006

SA delegate at the African Mathematical Union Congresses in Tunis (Tunisia) 2004, Yamoussoukro (Ivory Coast) 2009 and Abuja (Nigeria) 2013.

Member of the Advisory Board of the African Institute of Mathematical Sciences

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

Longer Visits:

1994: University of Ancona, CNR visiting research fellow 2 months

1997: Universities of Ancona and Florence, CNR visiting research fellow, 3 months

1997: University of Warsaw, visiting professor, 6 months

1999: University of Florence, CNR visiting professor, 1 month

2002: University of Parma, CNR visiting professor, 1 month

2003: University of Warsaw, visiting professor, 1 month

2003: Universities of Udine, Parma and Florence, visiting research fellow, 2 months

2003/2004: University of Franche-Comte, Besancon, visiting professor, 2 months

2009: Sir David Anderson Fellow, University of Strathclyde, Glasgow, 3 months.

2008-2018: Technical University of Lodz, Poland

2017: AIMS (Cameroon)

Recent shorter visits:

2019: South Ural State University, Chelyabinsk, Russia

2018: Strathclyde University, AIMS Rwanda, IIT Roorkee

2017: University of Heidelberg (Germany), University of Warsaw (Poland), Strathclyde University, University of Franche-Comte (France)

8. ARTISTIC OUTPUTS *(if applicable)*

9. MANAGEMENT AND ADMINISTRATIVE DUTIES

2005-2007: University of KwaZulu-Natal, Head of the School of Mathematical Sciences
2005-2008: Member of the Senate of the University of KwaZulu-Natal
2012-2014: Member of the College Academic Affairs Board
2015: University of KwaZulu-Natal, Academic Leader: Research.
2016-2018 Member of the Departmental Research and Higher Degree Committee, UP

10. COMMUNITY SERVICE OR PROFESSIONAL SKILLS

10.1 OUTREACH PROJECTS

1. Support of U20 Programme, visits with short motivational talks at high schools in Meyerton in 2016 and 2017 and in Sharpeville in 2016 with Crypto Giants during Spring Maths and Science Camps.
2. Keynote Speaker at the Research Day at the Faculty of Science and Agriculture, University of Limpopo, Polokwane, 24-25 October 2016

10.2 PROFESSIONAL SERVICE PERFORMED

1. Recent conferences co-organized

1. Semigroups of Operators - Theory and Applications, Kazimierz, Poland, October 2018
2. DFG-AIMS Workshop "EVOLUTIONARY PROCESSES ON NETWORKS" AIMS Rwanda, 20 March-24 March 2018
3. Analysis and Differential Equations with Applications to Natural Sciences II, Salt Rock, Kwazulu-Natal, 27 April-1 May 2018
4. 3rd Joint UNISA-UP Workshop on Theoretical and Mathematical Epidemiology, Pretoria, 27/02- 5/03 2016
5. Global change impact on diseases and alien species expansion: a capacity building workshop, AIMS, Cape Town, May 2-6 2016
6. CIMPA School: Mathematical modelling and analysis of complex systems, Naivasha, Kenya, 20-31 July 2015
7. Analysis and Differential Equations with Applications to Natural Sciences, Salt Rock, Kwazulu-Natal, 12-16 July 2015
8. CIMPA-UNESCO-South Africa School: Evolutionary Equations with Applications in Natural Sciences, Muizenberg, South Africa, 22 July-2 August, 2013
9. US-South Africa Workshop: Mathematical Methods in Systems Biology and Population Dynamics, 4-7 January 2012, Muizenberg, SA,
10. Semigroups of Operators - Theory and Applications, Będlewo, Poland, October 2013

2. Panels, advisory committees

1. Member of NRF Panel for Mathematical Sciences, 2008-2010 (Convenor in 2010)
2. Member of the NRF Thuthuka and Competitive Support for Unrated Researchers Panel (Mathematics and Physics), 2007-2010.
3. Member of the ASSAf Peer Review Panels on Scholarly Books and Conference Proceedings,

Chair of the Panel for Mathematics, Statistics and Computer Science, 2014-2015.

4. 2007-2008 a member of the ASSAf Panel for the TWAS Award
5. 2008-2018 assessor of applications for Claude Leon Postdoctoral Fellowship
6. Panel for the Peer Review of the Department of Mathematics at the University of Johannesburg, 10 May to 12 May 2016
7. Review of the CAANT John Knopfmacher Centre, Wits, May 2016
8. Professorial promotion committees, Wits, January 2017 and October 2017
9. Steering Committee for Mathematics, National Graduate Academy, 2019-

10.3 CLINICAL SERVICE

10.4 INVOLVEMENT WITH OTHER UNIVERSITIES/SCIENTIFIC INSTITUTIONS

Editorial activities

1. Editor-in-Chief of Afrika Matematika (Springer)
2. Member of Editorial Boards of Mathematical Methods for the Applied Sciences (Wiley)
3. Associate Editor of Quaestiones Mathematicae
4. Member of Editorial Board of Evolution Equations and Control Theory
5. Member of Editorial Board the AIMS Library Series of the Cambridge University Press.
6. Member of Editorial Board of Bulletin of the South Ural State University

Reviewing activities

1. I am a regular reviewer of project for NRF (formerly FRD) and the Italian Ministry for Education, Universities and Research, and the Polish National Science Centre.
2. External examiner for PhD theses from Tswane University of Technology, SA, University of Franche-Comte (2 times), University of Clermont –Ferrand, France, University of Pretoria (3 times), SA, Strathclyde University, Scotland, Cadi Ayyad University, Morocco, Technical University of Lodz, University of Warsaw, University of Warmia-Mazury, Silesian University, Poland, University of KwaZulu-Natal (4 times), SA, University of Cape Town, SA, University of Stellenbosch, SA, Nelson Mandela Metropolitan University, SA.
3. External examiner of over 20 MSc theses from the University of Witwatersrand, Technical University of Łódź, University of KwaZulu-Natal.
4. 2015-2017 External Examiner of Biomathematics, University of Cape Town
5. 2009-2011 External examiner of the Programme in Biomathematics, University of Stellenbosch,
6. 2007 MSc Programme in Modelling and Applied Mathematics and Applied Mathematics Programme, University of Zimbabwe
7. 2008 Applied Mathematics Programme of the University of Zimbabwe.
8. 2010-2012 Applied Mathematics Programme, Makerere University, Uganda.

10.5 REFEREE DUTIES

1. Assessor in professorial promotions at the Universities of Pretoria, Zimbabwe and KwaZulu-Natal.
 2. Assessor for the State Professor title applications from the University of Warsaw and the Silesian University (Poland).
 3. Reviewer of the DSc (habilitation) application at the Sfax University (Tunisia).
 4. Assessor in appointments and renewals of SARChI Chairs in Mathematical Education, Mathematics and Biomathematics
- Reviewer for the following journals: Journal of Mathematical Analysis and Applications, Journal of Differential Equations, SIAM Journal of Mathematical Analysis, SIAM Journal of Applied Analysis,

Transport Theory and Statistical Physics, Journal of Applied Analysis, Mathematical Models and Methods in Applied Sciences, Mathematical Methods in the Applied Sciences, Journal of Evolution Equations, Journal of Physics A, Quaestiones Mathematicae, AMS Transactions, Proceedings of the Royal Society A, Physics Letters A, Applied Mathematics and Computation, Semigroup Forum, Linear Algebra and Applications,

5. I wrote over 110 reviews for Mathematical Reviews and over 45 for ZentralblattMath.

6. I was a referee of book proposals for Cambridge University Press, Springer, Birkhäuser and the Publishing House of the Technical University of Lublin.

11. AWARDS AND SCIENTIFIC/SCHOLARLY RECOGNITION

11.1 EVALUATION STATUS AS SCIENTIST/SCHOLAR

First rated Y in 1994, NRF B1 rating since 2008

11.2 Research awards and prizes

1. 1997 University of Natal Book Prize in Health, Science and Engineering for 1995
2. 2009 University of KwaZulu-Natal Book Prize in Health, Science and Engineering for 2007
3. 2012 South African Mathematical Society Award for Research Distinction
4. 2013 Lifetime Fellow of the University of KwaZulu-Natal
5. 2013 Cross of Merit (Silver) of the Republic of Poland
6. 2014 1st Prize in the competition for the best paper in applied mathematics organized by Centre for Applications of Mathematics (Gdańsk)

11.3 Teaching awards and prizes

11.4 Artistic awards and prizes