#### **CURRICULUM VITAE**

# PERSONAL DETAILS

# Name: Roger B. Sidje

Email: roger.b.sidje@ua.edu

Position: Associate Dean (Aug 2013 - present), College of Arts and Sciences, The University of Alabama

Professor (Aug 2016 - present), Department of Mathematics, The University of Alabama

# EDUCATION

My formal qualifications are in mathematics and computational science, with the following degrees:

1989: BSc Mathematics and Computer Science, University of Yaounde, Cameroon

1990: MCompSci, University of Yaounde, Cameroon

1994: PhD (Scientific Computing), University of Rennes 1, France. With the financial support of a joint project between INRIA (France) and NSF (USA). *Topic: Parallel algorithms for the computation of large-scale matrix exponentials – Application to the computation of transient distributions of Markov processes*. My PhD thesis was awarded High Honours (“Très Honorable”) and is a bilingual document in French and English.

**EMPLOYMENT**

2013(Aug)–present: Associate Dean for Multicultural Affairs, College of Arts & Sciences, University of Alabama.

2016(Aug)–present: Professor, Department of Mathematics, University of Alabama.

2012(Aug)–2016(Aug): Associate Professor, Department of Mathematics, University of Alabama.

2008(Aug)–2012(Aug): Assistant Professor, Department of Mathematics, University of Alabama.

2008(Jan-Jul): Research Associate, Department of Computer Science & Engineering, University of Minnesota.

1997–2007: Research Fellow, ACMC/Department of Mathematics, UQ, Australia.

1994–1997: Research Officer, Department of Mathematics, University of Queensland, Australia.

1993–1994: Tutor, University of Rennes 1, France.

**ADMINISTRATIVE EXPERIENCE**

Since Fall 2013, I serve as Associate Dean for Multicultural Affairs in the College of Arts and Sciences at the University of Alabama. This is a very large College with over 8500 undergraduate students, 1100 graduate and professional students. The College has 22 units/departments within 3 divisions that are: humanities and fine arts; social sciences; and natural sciences and mathematics. My broad responsibilities include: recruitment and retention of minority and underrepresented faculty; promote diversity efforts across all divisions of the College; channel the vision and recommendations of the Dean. I assist with faculty searches and attend a variety of conferences to advertise faculty positions in the College, with particular regard toward reaching out to minority and underrepresented candidates. I also organize the Graduate Recruiting Expo (GREX) where graduate students across the country are invited to the UA campus, with a special focus given to women and minorities in STEM disciplines. I am the author of the College's component of the University Annual Strategic Diversity Report. I also serve as the College's coordinator for the Undergraduate Research and Creative Activity (URCA) conference, as well as the College's Level One coordinator for the United Way Campaign. I am a member of UA’s Council of Assistant and Associate Deans (CAAD), for which the duties are to advise the Office for Academic Affairs (OAA) on matters pertaining to academic policy and administration; and to serve as a channel for communication among the academic divisions and between the OAA and the various academic divisions.

**RESEARCH AND TEACHING INTERESTS**

My work in computational mathematics is well respected both in research and teaching, with my Expokit paper being a highly cited and thus influential mathematical paper – **over 500 citations** per Google Scholar, and having been nominated “Most Effective Teacher” at The University of Queensland in 2000; and soon after joining The University of Alabama in the Fall 2008, the Chair of the Department of Mathematics nominated me for the “College of Arts and Sciences Leadership Board Outstanding Commitment to Students Award” in 2011. My main interests in computational mathematics blend theory and practice. I am also acquainted with important applications where my techniques prove useful. These include environmental modeling, computational engineering and computational biology. I believe this combination of interests characterizes a good numerical analyst. Aside from these works in computational mathematics, I have also developed a completely new expertise in technologies vital for mathematics education – as we move more and more towards an environment for course delivery fit for online and mobile devices. My particular areas of focus include:

* numerical methods and mathematical software in linear systems and eigenvalue problems, matrix exponentials, matrix functions and differential equations;
* applications in Markov chains, computational biology, computational engineering;
* scientific parallel computing;
* app and web engineering (e.g., tablet app, MathML) both in terms of research developments and uptake for education, such as the development of interactive components to make mathematics education more effective in today’s digital age (e.g., I have developed MATLAB and MAPLE scripts that help students visualize concepts in a graphical, intuitive and animated manner).

**RESEARCH EXPERTISE**

I have broad skills in computational mathematics (development of new algorithms and theoretical analysis); web-based collaboration and mathematics education, and advanced computing. In the latter I am interested in the development of effective and robust methods both in the sequential and parallel contexts, with comparisons with competing methods, and with these techniques ultimately used in contemporary applications arising from environmental modeling, computational engineering and computational biology. My research has often led to concrete outcomes of benefit to end-users. Below are some of my outcomes in greater detail:

**Markov chains and EXPOKIT**: I developed the Expokit package for small dense and large sparse matrix exponentials, with a particular regard to matrices arising in the transient distributions of Markov chains where probability constraints must be maintained. This work has been hailed as a significant contribution to the field, with the resulting paper gathering over 500 citations per Google Scholar, making it a highly cited and thus influential mathematical paper. As a further testimony of this, Expokit has been embedded in a variety of applications (some commercial). In the opinion of Profs Moler and Van Loan: *“*Expokit *is the most extensive software for computing the matrix exponential”* (Siam Review, Vol. 45, No. 1, 2003). Prof. Cleve Moler is the creator of Matlab and founder of MathWorks, Inc., while Prof. Charles Van Loan is a professor at Cornell and is co-author with the late Prof. Gene Golub of the seminal book “Matrix Computations”. I also ported a parallel version of Expokit in the framework of the Australian Partnership for Advanced Computing (APAC).

**MathML**: I am regarded internationally as an expert on MathML and web technologies for mathematics education. I have developed a MathML renderer that has been integrated in all official releases of the Firefox web browser, and thus the hundreds of million users around the world who have Firefox automatically have my built-in MathML renderer. I was featured in a cover story of *The Sydney Morning Herald* and *The (Melbourne) Age* on May 25, 2004, where the mainstream press branded me as “one of the quietest open source achievers in Australia”. My work has also been recognized through invitations (all expenses paid) at international conferences and meetings in Canada and the USA, such as two paid invitations at the Firefox Engineering Summit in Mountain View, CA, USA (December 2005 and November 2006), and a paid invitation at the Institute for Mathematics and its Applications (IMA), University of Minnesota, Minneapolis (December 2006).

**Eigenvalues**: I have been involved in the development of Davdison-type methods for computing the outermost (i.e., largest or smallest) eigenvalues of large-scale egeinvalue problems and have performed comparisons with the Arnoldi-type methods of ARPACK (Sadkane & Sidje. Implementation of a variable-block Davidson method with deflation for solving large sparse eigenproblems. Numerical Algorithms Vol 20. 217-240, 1999). The resulting software was used by researchers in the UQ Department of Chemistry to tackle large-scale chemical problems.

**Generalized cross validation (GCV)**: An important problem in Australia is the monitoring and modeling of the effects of the climate on agricultural areas, through computer programs that fit smoothing spline surfaces to meteorological data and then use this information in simulation programs. The GCV smoothing algorithm was used by the Queensland Department of Primary Industries (DPI) and the Queensland Department of Natural Resources (DNR) for interpolating weather data such as temperature or rainfall observations. However the GCV smoothing algorithm is a computationally intensive scheme that involves the minimization of an expensive function. By developing a new algorithm, dubbed *FastGCV*, based on iterative Lanczos methods, it was possible to dramatically reduce the execution time, allowing DPI and DNR to considerably speedup their environmental modeling of drought conditions. This work was done with local collaborators, Kevin Burrage, Alan Williams, and an overseas collaborator, Jocelyne Erhel (INRIA-France), as well as collaborators from DPI and DNR.

**Krylov susbspace techniques and the chemical master equation**: I have developed sequential and parallel Arnoldi methods (and variants based on Newton bases at Leja points), as well as parallel QR factorization algorithms (and some others related algorithms) on the Intel Paragon and the IBM SP2 MIMD supercomputers. These algorithms are intended to serve as building blocks for methods based on Krylov subspaces, for instance, the large sparse matrix exponential, linear systems or eigenvalue problems. Moreover, they can also be used to efficiently solve highly overdetermined linear least squares problems that are dense. I have additionally developed distributed sparse matrix-vector multiplication routines that are indispensable for the construction of such Krylov bases on parallel computers. Remarkably, these techniques are proving effective to address large-scale problems that arise in computational cell biology and bioinformatics due to the *curse of dimensionality*. These are current hot topics as evidenced by the NSF grant of about $200K that I recently received (2013-2016). This funding is enabling me to investigate “inexact (or relaxed)” techniques, as well as adaptive approaches in conjunction with incomplete orthogonalization. An early fruit has been a novel reduction of the chemical master equation, whereby the stochastic simulation algorithm drives the finite state projection method in a fast, economical and adaptive way, yielding impressive savings both in computational time and memory consumption. A resulting paper was recently published in Mathematical Biosciences. In addition, the grant has been a catalyst for training. Indeed I am currently supervising 4 (four) PhD students as a direct upshot of the opportunity provided by the grant. I am also mentoring 6 (six) undergraduate students through projects that foster undergraduate research experience. Collaborative visits also got a jolt, with leading researchers invited to the department to give talks and discuss their recent research, e.g., Brian Munsky (Colorado State University), Douglas Shepherd (University of Colorado Denver), Nguyen Hoang (University of West Georgia) and Miloud Sadkane (University of Brest, France).

Below are some unsolicited testimonials about Expokit and its benefits to actual applications from a wide range of areas:

*I am a physicist in charge of writing a module in a large simulation package for an interferometric experiment in the detection of gravitational waves. I have found extremely interesting and useful your Expokit package. Thanks a lot for making it available!*

Andrea Vicere - Istituto Nazionale di Fisica Nucleare

*It works fine... and VERY fast!*

Dr. Jason Twamley, Laser Optics Group, Imperial College, London, UK

*I just wanted to say that I ran Expokit through f2c (fortran to C conversion) and did a benchmark. Expokit was approximately 100 times faster than the naive Taylor-series implementation. I was amazed! My project is a real-time flight-simulator for model-aircraft. Modern model aircraft are very quick and agile and this gives very short time-constants (in the order of milliseconds). Maybe I should put "Powered by Expokit" somewhere on the fuselage!*

Anders Musikka - anders.musikka@tele2.se

*Quadrus Financial Technologies Inc. has developed a proprietary math engine that implements a variety of numerical methods for option pricing and risk analysis. Could you please approve Expokit within Quadrus to permit our commercial use.*

Anthony Cabri - anthonyc@quadrusfinancial.com

**TEACHING EXPERTISE**

I have taught various courses/classes both at undergraduate and graduate levels. I was nominated *“Most Effective Teacher”* at UQ in Semester 1, 2000. And soon after joining UA, I was also nominated for the *“College of Arts and Sciences Leadership Board Outstanding Commitment to Students Award”* in 2011. My teaching experience includes the student supervisions and lectures given below.

**Student supervision**

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| **Student** | **Project** | **Outcome** |
| David Lass@ UA | Master’s research (2016-17) *Implementation of some parallel algorithms arising in sparse matrix and other applications* | Gained graduate research experience on implementing parallel numerical methods on the Alabama supercomputer |
| Maizy Pappas@ UA | UG Research (2014-15) | Gained UG research experience in the chemical master equation and Markov chains |
| Caris Mitchell@ UA | UG Research (2014-15) | Gained UG research experience in numerical techniques for ODEs |
| Brandon Reid@ UA | PhD Research (2014-in progress): *Equilibrium solution of the chemical master equation* | In progress |
| Phan, (Katie) Thanh Truc V.@ UA | UG Research (2014-15) | Gained UG research experience in the polynomial approximations of functions |
| Amy L. Puente@ UA | UG Research (2014-15) | Gained UG research experience in the polynomial approximations of functions |
| Keisha Cook@ UA | PhD Research (2013-in progress) *Improved variants of the stochastic simulation algorithm* | Attended 1 workshop, 1 upcoming conference, other outcomes in progress |
| Huy Duc Vo @ UA | PhD Research (2013-17) *Krylov approximation and model reduction methods for solving the chemical master equation* | Got a PostDoc position @ Colorado |
| Khanh Ngoc Dinh @ UA | PhD Research (2013-in progress) *Error and sensitivity analysis of inexact Krylov subspace methods* | 1 journal paper submitted, others in progress. Attended 3 conferences. |
| Tom S. Bertalan@ UA | UG Research (2011-12): *Multi-Multigrid: A Parallelized Multigrid Solver for Python*  | Got a PhD scholarship at Princeton (2012-2017). |
| ***In the dossier before becoming Assoc. Prof.*** |
| Nathan Winkles@ UA | PhD thesis (2008-11): *Performance Evaluation of Inexact GMRES* | Got a position at East Mississippi Community College. |
| Douglas Weathers@ UA | UG Research (2010-11): *Computing the Exponential Function with a Modified Laguerre Expansion* | One of the winners (in math & science) at UA’s Uundergraduate Research & Creative Activity (URCA) Conference. Then got a scholarship at the University of Maine (2013) and completed a master's in 2015 and got a lecturer position in 2016 at Coastal Carolina University. |
| Jennifer Pestana @ Queensland University of Technology, Australia  | UG Research (2006-07): *Solution of Richards Equation for Simulating Unsaturated Flow in Porous Media Using an Exponentially Fitted Euler Scheme*(co-supervision with Ian Turner, QUT). | Received First Class Honours in Math. She also won the University Medal for the Science Faculty 2007 and got a PhD scholarship at Oxford in Numerical Analysis (October 2008). |
| Shev MacNamara@ University of Queensland, Australia | PhD thesis (2005-08): *Krylov and Finite State Projection methods for simulating stochastic biochemical kinetics via the Chemical Master Equation*(co-supervision with Kevin Burrage, UQ) | Got a PostDoc position @ Oxford, then won a 2010 Fulbright Postdoctoral Scholarship @ MIT under Gil Strang. Now a Lecturer in the Math Department at the University of New South Wales. |
| Nguyen Si Hoang @ University of Queensland, Australia | Doctoral Development Program (2004): *Functionally fitted Runge-Kutta methods for solving ODEs* | Got a PhD scholarship at Kansas State University, and after completion, got a PostDoc position at the University of Oklahoma, and then a Faculty position at The University of West Georgia. |
| Thomas Schmelzer@ University of Queensland, Australia | Visiting Honours (2004). Co-supervision for 6-weeks with Nick Trefethen (Oxford University) who visited UQ for a year. | Completed his PhD at Oxford. |

**Lectures**

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| 2017 | UA – MATH238 – Appl. Diff. Eq. | Spring’17 | Lecturer – 62 UG students |
| 2017 | UA – MATH610 – Iterative Methods for Linear Systems | Fall’16 | Lecturer – 7 GD students |
| 2016 | UA – MATH300 – Intro Numer. Anal. | Spring’16 | Lecturer – 47 UG students |
| 2015 | UA – MATH300 – Intro Numer. Anal. | Fall’15 | Lecturer – 41 UG students |
| 2015 | UA – MATH485/585 – Intro Cplx. Anal. | Spring’15 | Lecturer – 33/3 UG/GD students |
| 2014 | UA – MATH610 – Iterative Methods for Linear Systems | Fall’14 | Lecturer – 6 GD students |
| 2014 | UA – MATH485/585 – Intro Cplx. Anal. | Spring’14 | Lecturer – 30/1 UG/GD students |
| 2013 | UA – MATH126 – Calculus II | Fall’13 | Lecturer – 53 UG students |
| 2013 | UA – MATH227 – Calculus III | Spring’13 | Lecturer – 47 UG students |
| 2013 | UA – MATH485/585 – Intro Cplx. Anal. | Spring’13 | Lecturer – 30/4 UG/GD students |
| 2012 | UA – MATH126 – Calculus II | Fall’12 | Lecturer – 75 UG students |
| 2012 | UA – MATH238 – Appl. Diff. Eq. | Fall’12 | Lecturer – 47 UG students |
| 2012 | UA – MATH126 – Calculus II | Spring’12 | Lecturer – 75 UG students |
| 2012 | UA – MATH300 – Intro Num. Anal. | Spring’12 | Lecturer – 22 UG students |
| 2011 | UA – MATH126 – Calculus II | Fall’11 | Lecturer – 64 UG students |
| 2011 | UA – MATH238 – Appl. Diff. Eq. | Fall’11 | Lecturer – 41 UG students |
| 2011 | UA – MATH227 – Calculus III | Sprin’11 | Lecturer – 40 UG students |
| 2011 | UA – MATH238 – Appl. Diff. Eq. | Spring’11 | Lecturer – 47 UG students |
| 2010 | UA – MATH238 – Appl. Diff. Eq. | Fall'10 | Lecturer – 42 UG students |
| 2010 | UA – MATH125 – Calculus I | Fall'10 | Lecturer – 27 UG students |
| 2010 | UA – MATH238 – Appl. Diff. Eq. | Spring'10 | Lecturer – 35 UG students |
| 2010 | UA – MATH227 – Calculus III | Spring'10 | Lecturer – 30 UG students |
| 2009 | UA – MATH238 – Appl. Diff. Eq. | Fall’09 | Lecturer – 29 UG students |
| 2009 | UA – MATH125 – Calculus I | Fall’09 | Lecturer – 45 UG students |
| 2009 | UA – MATH126 – Calculus II | Spring’09 | Lecturer – 32 UG students |
| 2009 | UA – MATH610 – Iterative Methods for Linear Systems | Spring’09 | Lecturer – 4 GD students |
| 2008 | UA - MATH145 – Honors Calculus I | Fall’08 | Lecturer – 34 UG students |
| 2007 | UQ - MATH4202 - Advanced Techniques in Numerical Linear Algebra | Semester 1 | Lecturer – 4 GD students |
| 2005 | UQ - MATH4202 - Advanced Techniques in Numerical Linear Algebra | Semester 1 | Lecturer – 3 GD students |
| 2004 | UQ - MATH6006 – Special Topics of Scientific Computing: ill-posed problems | Semester 1 | Team teaching (lecturer) – 3 GD students |
| 2003 | UQ - MATH4201 - Applications of Scientific Computing | Semester 1 | Team teaching (lecturer) – 3 GD students |
| 2002 | UQ - MATH4202 - Advanced Techniques in Numerical Linear Algebra | Semester 1 | Team teaching (lecturer) – 3 GD students |
| 2000 | Univ Yde - Numerical methods for the regularization of ill-posed problems | 4 weeks (3 hours everyday) | Lecturer – Intensive module at the University of Yaounde, and ensuing examination at the end of the course – 10 postgraduate students |
| 2000 | UQ - MN476 - Advanced Parallel Computation | Semester 1 | Team teaching (lecturer) – 3 GD students |
| 1997 | UQ - ME303 - Engineering Mathematics IIIc (Introductory Numerical Techniques) | 6 hours  | Team teaching (lecturer) – 60 UG students |
| 1996 | UQ - HPC | 1 week | Workshop (lecturer) – featuring guest spealer Prof. J. Dongarra from the University of Tennesse and Oak Ridge National Labs |
| 1996 | UQ - MN320 - Introduction to High Performance Computing | Semester 2 | Team teaching |
| 1996 | Univ Yde - Matrix functions and applications | 2 weeks (4 hours everyday) | Lecturer – Intensive module at the University of Yaounde, and ensuing examination at the end of the course – 15 postgraduate students |
| 1995 | UQ - HPC | Semester 2  | Team teaching |
| 1994 | Univ Rennes1 - Algorithms and data structures | Semester 1  | Team teaching (tutor) – 30 undergraduate students at the University of Rennes (France) |
| 1993 | Univ Rennes1 - Numerical analysis | Semester 2  | Team teaching (tutor) – 30 undergraduate students at the University of Rennes (France) |

**RESEARCH COLLABORATIONS**

2015-todate: Tensor methods

2009-todate: Inexact Krylov methods

2005-todate: Numerical methods in computational biology, with K. Burrage, M. Hegland, S. MacNamara.

2005-todate: Numerical methods for ODEs, with N.S Hoang.

2004: Matlab and grid computing (grid-enabled implementation of some genetic regulatory models), with K. Burrage, P. Burrage, G. Ericksson, S. Jeffrey, T. Pickett, T. Tian, A. Trefethen.

2004: Integrating Australia to Global e-Science, with K. Burrage, A. Trefethen.

2002-2006: Affiliated to the Australian Partnership for Advanced Computing (APAC).

2000-todate: MathML and web technology for mathematics education, with Mozilla and W3C.

1995-todate: Scientific computation, with local and international collaborators.

## SERVICE

As Associate Dean for Multicultural Affairs of the College of Arts and Sciences, I participate in outreach activities to publicize UA and help recruit more minority or under-represented faculty and students. This has involved helping about 150 faculty searches from the last two years to today. Also, through my involvement as organizer of the Graduate Recruiting Expo (GREX) for the College, I help bring graduate students from around the country to the UA campus, with a special focus given to women and minorities in STEM. A direct outcome of this has been the recruitment of 2 female PhD students in the Math Department, including a minority female African-America candidate who had to turn down a very competitive offer that Purdue University gave her. In the past, I have chaired the College of Arts and Sciences’ Diversity Committee and have been a member of the Department of Mathematics’ Graduate Course Committee.

I have been a Programme Committee member for conferences such as the International Conference on the Numerical Solution of Markov Chains (NSMC’10) at College of William & Mary, Williamsburg, VA; the International Conference on Scientific Computation And Differential Equations (SciCADE’99); the 10th Computational Techniques and Applications Conference (CTAC’01); the International Conference on the Numerical Solution of Markov Chains (NSMC’03) at the University of Illinois at Urbana-Champaign, IL; the 150th Markov Anniversary Meeting in the College of Charleston, SC. I co-edited the Proceedings of CTAC’01. I am a regular reviewer for computational science journals, refereed conferences, MSc, or PhD theses. Examples include: SIAM Journal of Scientific Computing, Numerical Algorithms, Journal of Computational and Applied Mathematics, IEEE Transactions on Automatic Control, Automatica.

In some cases, I am involved in developing in-depth scientific algorithms/codes that require considerable time to bear fruit. Successfully producing these outcomes relies first on the hands-on involvement of the inventor. An example is the new QRT algorithm published in the distinguished SIAM Journal of Matrix Analysis and Applications. This is a groundbreaking contribution to what has been a challenging problem in numerical analysis since the introduction of digital computers, with round-off errors due to finite precision arithmetic. Associated to this is the comparison of these codes with other competing codes. It is indeed revealing to see my final algorithms/codes gaining long-lasting acceptance and be embedded within numerous applications (some commercial) owing to their quality, and be commended by veteran numerical analysts such as Prof. Moler and Prof. Van Loan cited earlier.

Through 2000-2002, I developed a completely new expertise in web technologies both for collaborative web-based research and for mathematics education. Through this new involvement, I studied the fine points of computerized mathematical typesetting and developed a Mathematical Markup Language (MathML) renderer *inside* the source code of the Firefox web browser. This mathematical renderer is now an integral part of the official code of all Firefox releases. See the example screenshot that shows the output of my renderer. The screenshot is not made up of images produced by LaTeX2HTML (or similar) and included in the web page with <img> tags. Nor is the web page using plug-ins. Rather, my renderer takes as input the tag-based syntax of MathML, and then does an inline formatting in a TeX-like manner.

As this happens *at the heart of the browser*, I had to first study and understand the inner workings of the browser’s source code as well (it is absolutely amazing—over six million lines of C++). Moreover, the effort required a mathematical background to best computerize the fine points of mathematical notation (as opposed to generic programming). This multifaceted and massive investment has since paid other considerable dividends because browsers embedding my renderer have been distributed to hundreds of million users. I am now regarded as an international expert on MathML, and was invited at the Ontario Research Centre for Computer Algebra (ORCA) in Canada, and an invited speaker at the International MathML Conference 2002 in Chicago. Prof Burrage and I received a SIAM contract to write a book about MathML. I have contributed two book chapters in another book. On May 2004, I was featured in a cover story of The Sydney Morning Herald and The (Melbourne) Age, where I was branded by the mainstream press as *“one of the quietest open source achievers in Australia”.* The work also led to several invitations (all expenses paid) in the USA, including at MacKickhan Software, Inc., (maker of Scientific WorkPlace), in Las Cruces, New Mexico (June 2005), and two invitations at the Firefox Engineering Summit in Mountain View, CA (December 2005 and November 2006). It also resulted in a further invitation at the Institute for Mathematics and its Applications (IMA), University of Minnesota, Minneapolis (December 2006).

Below are some unsolicited testimonials about my work in MathML:

*I have been teaching Calculus for Engineers in a rather high tech class. One result is a full set of calculus I and II notes in HTML and MathML, 45\*3\*12 = 1,620 pages x 2 courses.*

Paul Gartside - gartside@math.pitt.edu, Department of Mathematics, University of Pittsburgh, USA.

*I find that most of my faculties here would love to be able to use math formulas in standard web pages as part of their coursework.*

James Bromberger - james@publishing.uwa.edu.au,

Campus Wide Information Systems Officer (University of Western Australia)

*I'm currently planning to markup my undergraduate maths notes in the form of a mathematical dictionary that I hope will be of use to future maths undergraduates. MathML support in Mozilla will make my efforts readable across the globe!*

Ben Pickering - maump@csv.warwick.ac.uk

Through 2013-2014, I received a grant from the College’s Academy of Research, Scholarship, and Creative Activity (CARSCA) to develop yet another completely new expertise in interactive mobile apps. The end-product that I developed was a mathematics app on the iPad (see the included screenshot that shows my app in action). Not only did this require familiarising myself with the nuts and bolts of app development but also on entering the Apple iOS ecosystem. The app allows 3rd-4th graders to develop early math skills by *doing* arithmetic operations on the touch-based interface of the iPad tablet. Unlike several other apps, the particularity of my app is that it provides instant feedback that allows students to recover and learn from their mistakes. Such instant feedback is especially useful when help is not forthcoming, as is often the case in underserved schools. As students practice more, they grow in confidence, develop good habits at an early stage, and become more skillful at solving similar elementary algebra problems. The app is designed to make the learning not only intuitive and effective, but also fun and enjoyable. And developing proficiency at this decisive stage is meant to contribute in reducing the achievement gap in advanced classes later, when the ‘math phobia’ has already set in.

The work attracted further interest from the Office of Academic Affairs who provided funding for iPads to be used in the actual environment of a classroom where the app could be validated. In collaboration with Dr Priscilla Davis (Department of Communicative Disorders) and with the assistance of five UA students volunteers, a pilot intervention was conducted at Holt Elementary School, an underserved school in Tuscaloosa that was devastated by the April 2011 tornado. We were able to ascertain the benefits in terms of improved skills and grades. In particular, there was a reduction in the number of attempts to get answers right, meaning that the instant feedback paid off.

Like most mathematicians, I never had to personally conduct field-testing of analytical ideas, let alone on human subjects. Because of the intervention on children, this was my first project that involved developing a human subjects protocol application for submission to the Institutional Review Board (IRB). After several reviews, UA’s Office of Compliance granted approval. This was an eye opening effort with regards to those other aspects.

## SOFTWARE

I have a *hands-on experience* in programming vector and parallel supercomputers for large-scale problems, encompassing shared-memory systems (Cray90, SGI PowerChallenge and Origin), distributed memory systems (Paragon, IBM/SP2), and massively parallel systems (DECmpp12000/MasPar). My software output includes:

* numerous sequential or parallel codes in Fortran, C/C++ or Matlab for my papers and other projects.
* the Expokit matrix exponential package, which is the one and only package of its kind, and has been embedded in several applications (some commercial).
* the MathML renderer in C++ for the Gecko web browser engine (which powers Mozilla Firefox and other web browsers on desktops and mobile devices).
* the mathematics app on the iPad that provides a touch-based interface for elementary students to practice arithmetic with instant feedback.

I also wrote HPC user manuals that have been used for training in several institutions around the world, including:

* **Sidje, R.B**., *Spotlight on the SGI Power Challenge Array*. Technical Report, Department of Mathematics, University of Queensland, 1995.
* **Sidje, R.B**., *Self-starting guide for the IBM Scalable POWERparallel SP2*. Technical Report, Department of Mathematics, University of Queensland, 1995.

## OTHER SKILLS

## Language skills – fluent French speaker

## RECENT MEETING/CONFERENCE PRESENTATIONS

## I have given several seminars at other university departments and have participated in several conferences or workshops, either as a conference or mini-symposium organiser, an invited speaker or a presenter. Some of my recent conference presentations include:

* Invited speaker at Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou, China, August 17, 2015.
* Speaker in two talks at the 8th International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, August 10-14, 2015.
* Speaker at the 2014 BIOT Symposium, Brigham Young University, Provo, Utah, Dec 11-12, 2014
* Speaker at the University of Brest, France, May 20, 2014
* Poster presentation at the 5th Conference on Systems Biology of Mammalian Cells, Berlin, Germany, May 12-14, 2014.
* Speaker at the 13th Copper Mountain Conference on Iterative Methods, Colorado, April 6-11, 2014
* Speaker at the Academies Conference-College Academy - CARSCA, 2014
* Speaker at the SAMSA Conference, Cape Town, South Africa, November 25-29, 2013
* **Invited Panelist at NSF Headquarters,** Arlington, VA, 2013
* Poster presentation at the 2013 Gordon Research Conference, Lucca (Barga), Italy, August 4-9, 2013
* Invited Faculty Panelist at the symposium “Opening the (Graduate) Schoolhouse Door at UA”, 9/12/2013
* Speaker at the Academies Conference-College Academy to Improve Student Success-CAISS, Apr 6, 2011
* Speaker at the JP meeting UA-UAB-UAH in Tuscaloosa, October 30, 2010.
* Seminar at the University of Yaounde I, Cameroon, Sept 23, 2010.
* Speaker and Member of the Program Committee of the 6th International Workshop on the Numerical Solutions of Markov Chains, Sept 16-17 2010, Williamsburg, Virginia
* Invited speaker at the Numerical methods and North-South Cooperation – an invitation-only conference in honor of Bernard Philippe for his 60th birthday. University of Yaounde I, Cameroon, March 2-7, 2009.
* Speaker at the Joint-Program meeting UA-UAB-UAH in Birmingham, November 1, 2008.

***Prior starting at UA in Fall’08:***

* Speaker at the 51st Annual Meeting of the Australian Mathematical Society, La Trobe University, Melbourne, September 25-28, 2007.
* Speaker at the 6th International Congress on Industrial and Applied Mathematics (ICIAM 2007), Zurich, Switzerland, July 16-20, 2007.
* Speaker at the International Conference on Scientific Computation And Differential Equations (SciCADE’07), St Malo, France, July 9-14, 2007.
* Speaker at the Workshop on High-dimensional Approximation, Australian National University, Canberra, February 18-22, 2007.
* Invited speaker at Florida A&M University, Tallahassee, FL, USA, December 14-19, 2006.
* Invited speaker at Emory University, Atlanta, GA, USA, December 10-13, 2006.
* Invited at the IMA "Hot Topic" Workshop on The Evolution of Mathematical Communication in the Age of Digital Libraries. Institute for Mathematics and its Applications (IMA), University of Minnesota, Minneapolis, MN, USA, December 8-9, 2006.
* Invited lecturer at the APAC Summer School in Computational Science, December 4-8, 2006, Queensland University of Technology, Brisbane.
* Invited at the Firefox Engineering Meeting, Mountain View, CA, USA. November 14-17, 2006.
* Speaker at the Computational Techniques and Applications Conference (CTAC), James Cook University, Townsville, July 2-5, 2006.
* Speaker and Member of the Program Committee of the 150th anniversary of the birth of A.A. Markov and the 100th anniversary of his seminal papers on Markov Chains, Charleston, SC, USA. June 12-14, 2006.
* Invited speaker at the Firefox Engineering Meeting, Mountain View, CA, USA. December 2-9, 2005.
* Invited speaker at the Symposium on Optimisation and Data Analysis in honour of Prof. Mike Osborne's 70th birthday, Australian National University, Canberra, Sept 21-23, 2005.
* Invited lecturer at the Institute for Molecular Bioscience (IMB) Winter School, Brisbane, July 5-9, 2004.
* Speaker at the APAC’03 Conference and Exhibition on Advanced Computing, Grid Applications and eResearch, at the Gold Coast, Sept 29 – Oct 2, 2003.
* Speaker at the 5th International Congress on Industrial and Applied Mathematics (ICIAM), Sydney, July 7-11, 2003.
* Speaker at the International Conference of Computational Science (ICCS), Melbourne, June 2-4, 2003.
* Speaker at the APAC Education Workshop in Sydney, October 3-4, 2002.
* Invited plenary speaker at the second International MathML Conference in Chicago, June 28-30, 2002.
* Invited speaker at the Ontario Research Centre for Computer Algebra (ORCCA), University of Western Ontario, Canada. June 21–27, 2002.
* Speaker at the Winter Workshop on Iterative Methods for Large Sparse Matrix Systems at QUT, featuring guest speaker Prof. Y. Saad from the University of Minnesota.July 8-10, 2002.

# HONORS

Included in Who’s Who.

# GRANTS

I currently hold an NSF grant (2013-2016) worth roughly $200K. Before becoming Associate Dean, I kept up the effort at making grant applications, with uninterrupted submissions at the local (RGC) and national levels (NSF), as well as in industry (Intel). I completed David G. Bauer’s 18 month Research Fellowship Program on advanced grant seeking skills, together with his Quality Circles to improve grant proposals.

# I have been a co-chief investigator in a number of ARC (Australian Research Council) grants. I have also received several travel grants to support my MathML work. Highlights of my funding include:

# 2013: External Grant from NSF, US$193,000

# 2013: External Grant from the Simons Foundation, US$35,000, but had to decline because of the NSF grant

# 2013: Grant from UA’s RGC (Research Grant Committee), US$6,000

# 2013: Grant from UA’s Office of Academic Affairs (OAA) Seed Funding Program on STEM in Underserved K-12 Schools in West Alabama, US$5,000

# 2013: Grant from UA’s CARSCA (College Academy of Research, Scholarship, and Creative Activity), US$3,300

# 2009: Teaching grant from UA’s CAISS (College Academy to Improve Student Success), US$5,000

# 2006: Travel grant at IMA (Institute for Mathematics and its Applications), US$1700

2005-2006: MathML in Firefox (Mozilla), US$6000

2005: Travel grant at MSI (Mackichan Software, Inc), US$3000

2004: Doctoral Development Program (UQ), AU$4000

2002: MathML support (ORCCA), US$2000

2000: Visiting Professor (INRIA, Rennes), French Francs 13,000

2000: MathML rendering (Netscape/Wolfram Research), US$4000

1997-1999: Numerical Solutions of DAEs in Process Engineering (ARC), AU$126K, with K. Burrage, I. Cameron.

1997-1999: Polymer melts (ARC), AU$165K, with K. Burrage, M. Mackay

1997: Stochastic models & techniques for SODEs in environmental modelling (ARC), AU$20K, with K. Burrage, R.Volker

1996: Matrix-free Parallel Methods for DAEs in process engineering (ARC), AU$19K, with I. Cameron

# PUBLICATIONS (see also technical report T1 below -– done at UA)

1. *SUBMITTED*
	1. Vo, H.D. and **Sidje R.B.** *An adaptive solution to the chemical master equation using tensors,* J. Chem. Phys. (submitted), 2017.
	2. Dinh, K.N. and **Sidje, R.B.** *An application of the adaptive Krylov-FSP-SSA method to parameter fitting in gene regulation.* Phys. Biol. (submitted), 2016
2. *ACCEPTED / APPEARED*
	1. Dinh, K.N. and **Sidje, R.B.** *Analysis of inexact Krylov subspace methods for approximating the matrix exponential.* Math. Comput. Simul. 2017. <http://dx.doi.org/10.1016/j.matcom.2017.01.002>
	2. Vo, H.D. and **Sidje, R.B.** *Approximating the large sparse matrix exponential using incomplete orthogonalization and Krylov subspaces of variable dimension*, Num. Lin. Alg. Appl., 2017. <http://dx.doi.org/10.1002/nla.2090>
	3. Sadkane, M. and **Sidje, R.B.** *An alternating maximization method for approximating the hump of the matrix exponential*. BIT Numerical Mathematics, 2017. <http://dx.doi.org/10.1007/s10543-016-0644-7>
	4. Vo, H.D. and **Sidje, R.B.** *Solving the chemical master equation with the finite state projection and inexact uniformization in quantized tensor train format*, Peer-reviewed Proceedings of the International Conference on Computational and Mathematical Biomedical Engineering, Pittsburgh, PA, 2017.
	5. Vo, H.D. and **Sidje, R.B.** *Implementation of variable parameters in the Krylov-based finite state projection for solving the chemical master equation*, Appl. Math. Comput. 293(15):334-344, 2017. <http://dx.doi.org/10.1016/j.amc.2016.08.013>
	6. Vo, H.D. and **Sidje, R.B.** *Improved Krylov-FSP method for solving the chemical master equation*, Lecture Notes in Engineering and Computer Science (Peer-reviewed Proceedings of the World Congress on Engineering and Computer Science - WCECS) 2226(1):521-526, 2016.

<https://doaj.org/article/c0c9b573325540b2a0112825ace796d9>

* 1. Vo, H.D. and **Sidje, R.B.** *Solving the chemical master equation by aggregation and Krylov approximations*, Peer-reviewed Proceedings of the 2016 IEEE 55th Conference on Decision and Control (CDC), 2016:7093-7098. <http://dx.doi.org/10.1109/CDC.2016.7799362> -

 <http://ieeexplore.ieee.org/document/7799362>

* 1. Vo, H.D. and **Sidje, R.B.** *Computational study of p53 regulation via the chemical master equation,* Phys. Biol. 13(3):035001, 2016. <http://dx.doi.org/10.1088/1478-3975/13/3/035001>
	2. Dinh, K.N. and **Sidje, R.B**. *Understanding the finite state projection and related methods for solving the chemical master equation*, Phys. Biol. 13(3):035003, 2016.

<http://dx.doi.org/10.1088/1478-3975/13/3/035003>

* 1. Sadkane, M. and **Sidje, R.B.** Efficient computation of the spectral projections of regular matrix pairs, J. Comput. Appl. Math., 298:72-81, 2016. <http://dx.doi.org/10.1016/j.cam.2015.11.035>
	2. Hoang, N.S. and **Sidje, R.B.** *Functionally fitted Runge-Kutta-Nyström methods*, BIT Numerical Mathematics, 56:129-150, 2016. <http://dx.doi.org/10.1007/s10543-015-0561-1>
	3. Dinh, K.N. and **Sidje, R.B***.,* *A case study of solving the chemical master equation with time-varying parameters*. Peer-reviewed Proceedings of the 2105 Biotechnology and Bioinformatics (BIOT) Symposium, 2015.
	4. Vo, H.D. and **Sidje, R.B.** *Advances in the Krylov-based finite state projection algorithm*. Peer-reviewed Proceedings of the 2105 Biotechnology and Bioinformatics (BIOT) Symposium, 2015.
	5. **Sidje, R.B.** and Vo, H.D. *Solving the chemical master equation by a fast adaptive finite state projection based on the stochastic simulation algorithm*, Mathematical Biosciences, 269:10-16, 2015. <http://dx.doi.org/10.1016/j.mbs.2015.08.010>
	6. **Sidje, R.B.** and Vo, H.D. *A projection method based on the stochastic simulation algorithm*. Peer-reviewed Proceedings of the 2104 Biotechnology and Bioinformatics (BIOT) Symposium, 2014.
	7. Bertalan, T.S., Islam, W., **Sidje, R.B.** and Carlson, E.S. *OpenMG: A New Multigrid Implementation in Python*. Num. Lin. Alg. Appl., 21(5):685-700, 2014. <http://dx.doi.org/10.1002/nla.1920>
	8. Hoang, N.S. and **Sidje, R.B.** *On the equivalence of the continuous Adams-Bashforth method and Nordsieck's technique for changing the step size*. Appl. Math. Letters, 26(7):725-728, 2013. <http://dx.doi.org/10.1016/j.aml.2013.02.001>
	9. **Sidje, R.B***. Inexact uniformization and GMRES for large Markov chains*. Num. Lin. Alg. Appl., Vol 18, No 6, pp.947-960, 2011. <http://dx.doi.org/10.1002/nla.794>
	10. **Sidje, R.B***. On the simultaneous tridiagonalization of two symmetric matrices*. Numerishe Mathematik, 118(3):549-566, 2011. <http://dx.doi.org/10.1007/s00211-010-0357-9>
	11. **Sidje, R.B.**, Winkles, N*. Evaluation of the performance of inexact GMRES*. J. Comput. Appl. Math., Vol. 235, pp. 1956-1975, 2011. <http://dx.doi.org/10.1016/j.cam.2010.09.022>
	12. **Sidje, R.B**. and Saad, Y. *Rational approximation to the Fermi-Dirac function with applications in density functional theory.* Numerical Algorithms, Vol. 56, No 3, pp 455-479, 2011. <http://dx.doi.org/10.1007/s11075-010-9397-6>
	13. **Sidje, R.B.**, *Inexact uniformization and GMRES for computing transient and stationary probabilities.* Peer‑reviewed Proceedings of the 6th International Workshop on the Numerical Solutions of Markov Chains. Editors: M. Benzi, T. Dayar. 2010.
	14. Sheehan, B.N., Saad, Y. and **Sidje, R.B***. Computing exp(-τA)b with Laguerre polynomials*. Electronic Transactions on Numerical Analysis (ETNA), Vol. 37, 147-165, 2010. <http://etna.mcs.kent.edu/vol.37.2010/pp147-165.dir/pp147-165.pdf>
	15. McNamara, S., Bersani, A.M., Burrage, K. and **Sidje, R.B.** *Stochastic chemical kinetics and the total quasi-steady-state assumption: application to the stochastic simulation algorithm and chemical master equation*. J. Comp. Phys., 129(9):095105-095105-13, 2008. <http://dx.doi.org/10.1063/1.2971036> [*Later selected for the September 15, 2008 issue of Virtual Journal of Biological Physics Research*.]

***Prior starting at UA in Fall’08:***

* 1. McNamara, S.,Burrage, K. and **Sidje, R.B**. *Application of the Strang splitting to the chemical master equation for simulating biochemical kinetics*. International J. Computational Science on Additive and Multiplicative Operator Splitting, Vol. 2, No. 3, 402-421, 2008.
	2. MacNamara, S., Burrage, K., and **Sidje, R.B**. *Multiscale modeling of chemical kinetics via the master equation*. SIAM J. Multiscale Modeling and Simulation, Vol. 6, No 4, pp. 1146-1168, 2008. <http://dx.doi.org/10.1137/060678154>
	3. **Sidje, R.B.,** Williams, A.B. and Burrage, K. *Fast generalized cross validation using Krylov subspace methods*. Numerical Algorithms, 47(2):109-131, 2008. <http://dx.doi.org/10.1007/s11075-007-9150-y>
	4. Hoang, N.S. and **Sidje, R.B.** *On the stability of functionally fitted Runge-Kutta methods*. BIT Numerical Mathematics, 48(1):61-77, 2008. <http://dx.doi.org/10.1007/s10543-007-0158-4>
	5. Hoang, N.S. and **Sidje, R.B.** *Functionally fitted explicit pseudo two-step Runge-Kutta methods*. Appl. Numer. Math 59(1):39-55, 2009. <http://dx.doi.org/10.1016/j.apnum.2007.11.023>
	6. MacNamara, S., Burrage, K. and **Sidje, R.B**. *Numerical methods for the chemical master equation and applications to stochastic models or receptor oligomerisation*, PAMM · Proc. Appl. Math. Mech (PAMM), Vol 7, Issue 1, pp. 2110001–2110002, December 2007. <http://dx.doi.org/10.1002/pamm.200700209>
	7. McNamara, S.,Burrage, K. and **Sidje, R.B**. *Stochastic analysis of the VEGF receptor response curve*. In T.D. Pham and X. Zhou, editors, Computational Models for Life Sciences—CMLS '07: 2007 International Symposium on Computational Models of Life Sciences, pp. 238-247, AIP Conference Proceedings Volume 952, 2007. ISBN 978-0-7354-0466-3. <http://dx.doi.org/10.1063/1.2816628> [*Later selected for adaptation and republication in JCAET Special Issue on Engineering and Computational Technologies in the Life Sciences, 2008*.]
	8. **Sidje, R.B.** and Hoang, N. S. *On the stability function of functionally fitted Runge-Kutta methods*. In W. Read and A.J. Roberts, editors, Proceedings of the 13th Biennial Computational Techniques and Applications Conference, CTAC-2006, Vol. 48(E) of *ANZIAM J*., pp. C151-C167, 2007.
	9. McNamara, S., **Sidje, R.B.** and Burrage, K. *An improved dynamic finite state projection algorithm for the numerical solution of the chemical master equation with applications*. In W. Read and A.J. Roberts, editors, Proceedings of the 13th Biennial Computational Techniques and Applications Conference, CTAC-2006, Vol. 48(E) of *ANZIAM J*., pp. C397-C419, 2007.
	10. **Sidje, R.B.**, Burrage, K. and McNamara, S. *Inexact uniformization method for computing transient distributions of Markov chains*. SIAM J. Sci. Comput., Vol. 29, No. 6, pp. 2562-2580, 2007. <http://dx.doi.org/10.1137/060662629>.
	11. Hoang, N.S., **Sidje, R.B.** and Cong, N.H. *Analysis of trigonometric implicit Runge-Kutta methods*. J. Comput. Appl. Math., Vol. 198, pp. 187-207, 2007. <http://dx.doi.org/10.1016/j.cam.2005.12.006>
	12. Hoang, N.S., **Sidje, R.B.** and Cong, N.H. *On functionally-fitted Runge-Kutta methods*, BIT Numerical Mathematics, Vol. 46, pp. 861-874, 2006. <http://dx.doi.org/10.1007/s10543-006-0092-x>.
	13. Burrage, K., Hegland, M., McNamara, S., and **Sidje, R.B.** *A Krylov-based finite state projection algorithm for solving the chemical master equation arising in the discrete modelling of biological systems*. In Markov 150th Anniversary Meeting, A.N. Langville and W.J. Stewart (eds), pp. 21-38, 2006. Boson Books. ISBN 1932482342.
	14. **Sidje, R.B**., and Burrage, K. (2005): *QRT: A QR-based tridiagonalization algorithm for nonsymmetric matrices*. SIAM J. Mat. Anal. Appl., Vol. 26, No. 3, pp. 878-900, 2005. <http://dx.doi.org/10.1137/040612476>
	15. **Sidje, R.B.***, Make MathML content.* In Firefox Hacks, O'Reilly & Associates, N. McFarlane, 2005. ISBN 0596009283.
	16. **Sidje, R.B**, *Install fonts and character support.* In Firefox Hacks, O'Reilly & Associates, N. McFarlane, 2005. ISBN 0596009283.
	17. Burrage, K., Burrage, P., Jeffrey, S., Pickett, T., **Sidje, R.B.** and Tian, T.: *A grid implementation of chemical kinetic simulation methods in genetic regulation.* Proceedings of the APAC Conference and Exhibition on Advanced Computing, Grid Applications and eResearch, 2003.
	18. **Sidje, R.B.**, Burrage, K. and Philippe, B. (2003): *An augmented Lanczos algorithm for the efficient computation of a dot-product of a function of large sparse symmetric matrix.* P. M. A. Sloot, D. Abramson, A.V. Bogdanov, J.J. Dongarra, A.Y. Zomaya and Y.E. Gorbachev (Editors): Lecture Notes in Computer Science 2659, pp. 693-704, 2003. <http://dx.doi.org/10.1007/3-540-44863-2_68>
	19. Burrage, K. and **Sidje, R.B**., Eds: *ANZIAM J.* Vol. 44(E).Proc. of 10th Computational Techniques and Applications Conference CTAC-2001.
	20. Christen, P., Altas, I, Hegland, M., Roberts, S., Burrage, K. and **Sidje, R.B.** *Parallelization of a finite element surface fitting algorithm for data mining.* Vol. 42(E) of *ANZIAM J*., pp. C385-C399, 2000.
	21. Christen, P., Altas, I, Hegland, M., Roberts, S., Burrage, K. and **Sidje, R.B.** *A parallel finite element surface fitting algorithm for data mining.* Proceedings of the ParCo-99 Conference, Delft, 17-20 August 1999.
	22. Sadkane, M. and **Sidje, R.B.** *Implementation of a variable block Davidson method with deflation for solving large sparse eigenproblems*. Numerical Algorithms, Vol. 20, pp. 217-240, 1999. [http://dx.doi.org/10.1023/A:1019199700323](http://dx.doi.org/10.1023/A%3A1019199700323)
	23. **Sidje, R.B.** and Stewart, W. J. *A numerical study of large sparse matrix exponentials arising in Markov chains*. Computational Statistics & Data Analysis, Vol. 29, pp. 345-368, 1999. [http://dx.doi.org/10.1016/S0167-9473(98)00062-0](http://dx.doi.org/10.1016/S0167-9473%2898%2900062-0)
	24. **Sidje, R.B.** *Expokit: A software package for computing matrix exponentials*. ACM, Transactions on Mathematical Software, 24(1):130-156, 1998. <http://dx.doi.org/10.1145/285861.285868>
	25. Galand, M., Lilensten, J., Kofman, W. and **Sidje, R.B.**: *Proton transport in the ionosphere, 1. Multistream approach of the transport equation*. Journal of Geophysical Research, Vol. 102(A10), pp. 22,261-22,272, 1997. <http://dx.doi.org/10.1029/97JA01903>
	26. Burrage K, Eldershaw, C. and **Sidje R.B**. *A Parallel matrix-free implementation of a Runge-Kutta code*. Proceedings of the 15th IMACS World Congress on Scientific Computation, Modelling and Applied Mathematics, Berlin (Germany), Vol. 2, 45-50, 1997.
	27. **Sidje, R.B.** *Alternatives for parallel Krylov basis computation*. Numerical Linear Algebra with Applications, Vol. 4(4), 305-331, 1997. [http://dx.doi.org/10.1002/(SICI)1099-1506(199707/08)4:4<305::AID-NLA104>3.0.CO;2-D](http://dx.doi.org/10.1002/%28SICI%291099-1506%28199707/08%294%3A4%3C305%3A%3AAID-NLA104%3E3.0.CO;2-D)
	28. Philippe, B. and **Sidje, R.B.** *Transient solutions of Markov processes by Krylov subspaces*. In Computations with Markov Chains, Stewart WJ (ed.). Kluwer Academic: Boston, 95–119, 1995. <http://dx.doi.org/10.1007/978-1-4615-2241-6_7>
	29. Philippe, B. and **Sidje, R.B.** *Parallel algorithms for the Arnoldi procedure*. In Iterative Methods in Linear Algebra, II, IMACS Series in Computational and Applied Mathematics 3, IMACS, New Brunswick, NJ, 156-165, 1995.
1. *TECHNICAL REPORTS*
	1. R.B. Sidje, Diminishing returns of extra loan repayments, 2010.
	2. R.B. Sidje, Spotlight on the SGI POWER CHALLENGEarray, 1995
	3. R.B. Sidje, A self-starting guide for the IBM SP2, 1995
	4. Philippe, R.B. Sidje, Transient solutions of Markov processes by Krylov subspaces, 1993
	5. R.B. Sidje, M. Sadkane, An adaptive sparse unsymmetric linear system solver, 1992