Research Group in
Mathematical Inequalities
& Applications

Report

1-September-2001 to 31-December-2003

School of Computer Science & Mathematics
Faculty of Science Engineering & Technology
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword by Associate Professor P. Cerone</td>
<td>2.</td>
</tr>
<tr>
<td>Preface</td>
<td>3.</td>
</tr>
<tr>
<td>- Research Support</td>
<td>4.</td>
</tr>
<tr>
<td>- Memorandum of Understanding with GSNU</td>
<td>5.</td>
</tr>
<tr>
<td>- Research Projects</td>
<td>6.</td>
</tr>
<tr>
<td>Website</td>
<td>7.</td>
</tr>
<tr>
<td>- Homepage</td>
<td>7.</td>
</tr>
<tr>
<td>- Sitemap</td>
<td>9.</td>
</tr>
<tr>
<td>- Journal Exchange Scheme</td>
<td>10.</td>
</tr>
<tr>
<td>JIPAM</td>
<td>11.</td>
</tr>
<tr>
<td>- GI8 Conference</td>
<td>11.</td>
</tr>
<tr>
<td>- Main Page</td>
<td>14.</td>
</tr>
<tr>
<td>- Volume 3, Issue 5</td>
<td>18.</td>
</tr>
<tr>
<td>- List of Volumes</td>
<td>22.</td>
</tr>
<tr>
<td>- Editorial Board</td>
<td>23.</td>
</tr>
<tr>
<td>Online or Offline?</td>
<td>24.</td>
</tr>
<tr>
<td>RGMIA in the Media</td>
<td>26.</td>
</tr>
<tr>
<td>Research Students</td>
<td>30.</td>
</tr>
<tr>
<td>Editorial Appointments</td>
<td>31.</td>
</tr>
<tr>
<td>Seminars and Conferences</td>
<td>32.</td>
</tr>
<tr>
<td>- RGMIA Seminars</td>
<td>32.</td>
</tr>
<tr>
<td>- Conferences</td>
<td>34.</td>
</tr>
<tr>
<td>Visitors to the RGMIA</td>
<td>35.</td>
</tr>
<tr>
<td>- Photographs</td>
<td>38.</td>
</tr>
<tr>
<td>Published journal papers and books</td>
<td>40.</td>
</tr>
</tbody>
</table>
This report is the fourth since the Research Group in Mathematical Inequalities and Applications (RGMIA) was founded in 1998 by the team currently working in the School of Computer Science and Mathematics. The group is led by this same team and has a world-wide membership in excess of 700. Mathematical Inequalities and Applications is one of the three main research areas of the School of Computer Science and Mathematics and work conducted by the key members of the RGMIA forms an integral part of the research effort in the Faculty of Science Engineering and Technology at Victoria University. Research is carried out in mathematical inequalities that have a large potential for application to practical problems. These have impacted the areas of numerical analysis, probability theory and statistics, information theory, coding and guessing and the qualitative theory of differential and integral equations, which provide models for a large number of physical and engineer phenomena.

The initiative to provide electronic access to the RGMIA Research Report Collection has proven beneficial (see the article by Lawrence on page 24). The printed collection is used in exchange for over 70 international journals and the electronic version has provided a forum for stimulating research in mathematical inequalities throughout the world. The electronic peer-reviewed, *Journal of Inequalities in Pure and Applied Mathematics* (JIPAM), also established at Victoria University, has seen a growth to five issues per year. A recent special issue (Volume 4, Issue 3(G18)) was devoted to publishing the proceedings of an elite international meeting on General Inequalities.

The activities of the group have brought considerable international recognition to Victoria University. The group maintains active research contact with other national & international researchers including researchers from Australia, USA, Croatia, Romania, Austria, Canada, Korea and others. The RGMIA has hosted a number of international visitors and is seen as the number one group in the domain worldwide. The forum created by the RGMIA has been able to transcend the barriers of time, cost and access frequently imposed by the large publishing houses.

Associate Professor Pietro Cerone,
Head of School of Computer Science and Mathematics
Preface

The RGMIA was founded in September 1998 by Professor S.S. Dragomir and now in its fourth year continues to attract new members worldwide. The group aims to:

- disseminate results via publication (both in print and electronic form) and conferences,
- create an awareness of the theory of inequalities and support seminars and visiting academics,
- illustrate the applicability of inequalities in the sciences. For e.g. numerical analysis, statistics, probability and information theory.

The group is nurtured and co-ordinated by the local Victoria University group comprising of:

- N. S. Barnett
- P. Cerone
- F. Cirstea
- N. Diamond
- S.S. Dragomir
- I. Gomm
- G. Hanna
- J. Horwood
- A. McAndrew
- R. Moore
- J. Roumeliotis
- G. Sorrentino
- F. Scarmozzino
- N. Sharda
- A. Sofo
- G. Thorpe
- D. Watson

The management committee of the RGMIA

(from top left: A. Sofo, J. Roumeliotis, P. Cerone, N.S. Barnett and S. S. Dragomir — Team Leader. Chair: Theory of Inequalities)
The “Theory of Mathematical Inequalities”, as may easily be seen in Mathematical Reviews, section 26Dxx, edited by the American Mathematical Society, is a domain of Mathematical Analysis which has grown ten fold in as many years. In its five years of existence, the RGMIA has played a leading role in the growth of Mathematical Inequalities.

In the period beginning 1st September, 2001 and ending 31st December, 2003 the group has seen


The research output of the key members of the RGMIA in the year 2001 was impressive. Together, they had 54 published articles in refereed journals for the year 2001. To put this more globally, that is 85.7% of the sixty-three papers published by the School of Communications and Informatics, 46.2% of the one hundred and seventeen papers published by the Faculty of Engineering and Science, and 18.1% of the total two hundred and ninety-nine University’s published papers.

This trend continued throughout 2002 and 2003 (see appendices for details) and looks set to continue this year. In summary, the output of the group in peer reviewed international journals and books since its inception, is as follows:

- 1998: 26 research papers
- 1999: 39 research papers
- 2000: 60 research papers and chapters in books
- 2001: 65 research papers and chapters in books, one edited book
- 2002: 81 research papers and chapters in books, one edited book
- 2003: 65 research papers and chapters in books, two edited books, two authored books

These publications attract funding to the University via the research quantum. On an average basis across the years, each publication has brought to the University approximately $850, half of which has flowed directly to the Faculty and the balance has been used by the University on research related activities. In addition to this, for each of these publications approximately $1700 has flowed to the University to fund places for higher degree by research students. In total, for each of the years 1998-2002, publications of the group have attracted $66,300; $99,450; $124,491; $144,238; $154,863 respectively.

Research Support

- For 2002, we obtained an VU Discovery (New) Research Grant with the project “Approximation of f-Divergence via Ostrowski Type Inequalities” ($12,000)
- For 2003, we obtained an VU Discovery (New) Research Grant with the project “Accurate Approximation of Cauchy Principal Value Integrals” ($15,000)
Memorandum of Understanding with GSNU

In the period of July 15 – October 5, 2003, Professor S.S. Dragomir visited the Dept. of Mathematics Education from Gyeongsang National University in Jinju under the “Memorandum of Understanding” between Victoria University of Technology and Gyeongsang National University (see http://www.gsnu.ac.kr/english/).

During the period of July 15, 2003 to October 5, 2003, 14 research papers were completed. These have been progressively submitted for publication in prestigious international journals in the domain of Mathematical & Functional Analysis. Once published, they will attract the corresponding publication quantum in both Australia and Korea. The papers are already publicly available and can be viewed as preprints in The Mathematics Preprint Server located at the web address: http://www.mathpreprints.com/math/Preprint/show/index.htm

During his visit in Korea, Professor Dragomir gave a total of nine talks to different Mathematics Departments in the southern part of Korea. The details are as follows:

Invited talks

- **Refinements of the Cauchy-Bunyakovsky-Schwarz Inequality & Applications**
  Department of Mathematics,
  Dong-Eui University, Pusan.
  19th of August, 2003. (see http://www.dongeui.ac.kr/english/)

- **Reverses of the Cauchy-Bunyakovsky-Schwarz Inequality & Applications**
  Department of Mathematics,
  Dong-A University, Pusan.
  19th of August, 2003. (see http://english.donga.ac.kr/)

- **A Survey on the Cauchy-Bunyakovsky-Schwarz Type Inequality**
  Department of Mathematics,
  Kyungnam University, Masan.

- **Recent Advances on the Cauchy-Bunyakovsky-Schwarz Inequality Generalizations and Refinements**
  Department of Mathematics,
  Chungnam National University,
  Daejeon, 29th of September, 2003.

Local talks for postgraduate students within the Department of Mathematics & Mathematical Education of Gyeongsang National University.

- Some Ostrowski Type Inequalities Via Cauchy’s Mean Value Theorem
- The Median Principle for Inequalities and Applications
- Sharp Bounds of Čebyšev Functional for Stieltjes Integrals and Applications
- Some Inequalities for f-Divergence in Information Theory
- On Bessel and Grüss Inequalities for Orthonormal Families in Inner Product
Research Projects

Research Projects in progress are:

- Quadrature Formulae Via Ostrowski and Grüss Type Inequalities and Applications for Integral Transforms.
- Cubature Formulae Via Generalized Taylor Expansions.
- Approximation of Riemann-Stieltjes Integrals and Applications in Reliability Theory.
- A comparison of Csiszár Divergence Measures and Their Application in Information Theory.
- Inequalities for Variance and Applications in Probability and Statistics.
- Vector Valued Inequalities and Applications for Differential Equations in Banach Spaces.
- Approximation of Hilbert Transforms with Applications in Optics
- Weighted and Product Inequalities with Applications for Singular Quadrature and Integral Equations.
- Approximation of Fourier Type Transforms and Applications in Electric and Electronic Engineering
- Integral Inequalities of the Hermite-Hadamard Type with Applications in Information Theory.
- Jensen Type Inequalities and Applications for Divergence Measures in Information Theory.
- Best Approximations in Banach Spaces in Terms of Semi-Inner Products and Applications for Nonlinear Operators
- Bounds in Risk Theory and Estimates of Risk Measures
- Estimations of Gini mean and Gini index
**RGMIA Research Report Collection**

The RGMIA Research Report Collection has as its main goal the rapid dissemination of results to a wide audience. To further this aim, papers submitted to the report can be easily downloaded online with a password. In addition, the Research Report is exchanged with over 70 journals worldwide and sent to various mathematics centers and departments. To cope with the excess papers submitted to the report when it was restricted to four issues a year, the RGMIA introduced a completely electronic version which would not go to press. The exchange scheme continues to flourish, with several new exchange partners added to our already long list.

**RGMIA Members**

The RGMIA membership has increased to over 700 hundred members these past few years, attracting members from very diverse fields; fields such as computer science, education, biology, physics, and mathematics in art.

Main Page
Welcome to the HomePage for the Research Group in Mathematical Inequalities and Applications (RG Mia).

Mission

The Research Group is comprised of academics and researchers from Austria, Asia, Africa, Europe and North America. The aims of the group are to:

- disseminate results via publication (both in print and electronic form) and conferences,
- create an awareness of the theory of inequalities and support seminars and visiting academics,
- illustrate the applicability of inequalities in the sciences. For example, numerical analysis (including quadrature and integral equations), statistics, probability and information theory.

Description

The RG Mia was founded in September 1998 and is based at Victoria University. It is chaired by Professor S.S. Dragomir and now boasts over 700 members worldwide. Within months of its birth, the RG Mia began its own electronic periodical Research Report Collection. All authors who submit a paper to the Collection receive the printed version that includes their contribution. As a result, inequalities research is made available to members in a timely fashion. The printed version of this is now exchanged with over sixty international journals.

In addition to the Research Report Collection, the group hosts its own fully-refereed electronic journal, the Journal of Inequalities in Pure and Applied Mathematics (JIPAM) that boasts 65 international editors. JIPAM was officially launched in April 2000.

The RG Mia has also:

1. set up its own electronic database in the Theory of Inequalities. The papers in the database are grouped into categories. These are:
   - Inequalities and Information Theory
   - Inequalities in Abstract Spaces
   - Inequalities in Numerical Integration
   - Hermite-Hadamard Type Inequalities
   - Metric Inequalities and their applications
   - Jensen Type Inequalities
   - Grüss Type Inequalities
   - Inequalities and Probability Theory
   - Inequalities for Means

2. created a mailing list of mathematicians with interests in inequalities.

Members of the Group

Our Research Report Collection is available to all members. If you have an interest in inequalities and their applications and would like to join then you can register online, or feel free to contact us (by selecting Feedback here or from the link on the left of any page).

Group Members
Research Group in Mathematical Inequalities and Applications (RGMIA)

- What's New
- Alphabetical listing of Members (735 members)
- Become a member

Research Report Collection
- Volume 1, Number 1
- Volume 1, Number 2
- Volume 2, Number 2
- Volume 2, Number 3
- Volume 2, Number 4
- Volume 2, Number 5
- Volume 2, Number 6
- Volume 2, Number 7
- Volume 3, Number 1
- Volume 3, Number 2
- Volume 3, Number 3
- Volume 3, Number 4
- Volume 4, Number 1
- Volume 4, Number 2
- Volume 4, Number 3
- Volume 4, Number 4
- Volume 5, Number 1
- Volume 5, Number 2
- Volume 5, Number 3
- Volume 5, Supplement
- Volume 6, Number 1
- Volume 6, Number 2
- Volume 6, Supplement
- Volume 7, Number 1
- Volume 7, Number 2
- Volume 7, Supplement

Database in Inequalities
- Search By Author
- Monographs
- Papers in Information Theory
- Inequalities in Abstract Spaces
- Inequalities in Numerical Integration
- Hermite-Hadamard Inequality
- Matrix Inequalities in Science and Engineering
- Jensen Inequality
- Convex Type Inequalities
- Inequalities & Probability
- Inequalities for Means

- Search the RGMIA Web
- Site Map
- Links
- Labrotaries
- Papers Submitted for Publication by VUT
- Publications list of RGMIA members
- The RGMIA Logo
Exchange Scheme

Exchange Journals

2. Acta Mathematica Academiae
3. Annals de l'Institut Fourier
4. Annals de l'Institut Fourier
5. Applications of Mathematics
6. Archivum Mathematicum
7. Atti del Seminario Matematico e Fisico dell' Università di Modena
8. Biblioteca Centrale Universitaria, "Lucian Blaga",
9. Boletim da Sociedade Paranaense de Matemática
10. Boletin de la Sociedad Matemática Mexicana
12. Bulletin of the Faculty of Science, Ibaraki University
15. Chinese Annals of Mathematics
16. Comptes Rendus Mathématiques
17. Danish Center for Applied Mathematics and Mechanics Report
18. Discrete Mathematics
19. Extracta Mathematicae
20. Fibrations Quarterly
21. Forum
22. Folia Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis. Mathematica
23. Folia Mathematica
24. Funkcialaj Ekvacioj
25. Gazetele Mathematica
26. Gazetta delle Scienze Matematiche e Fisiche
27. Italian Journal of Pure and Applied Mathematics
28. Journal of Applied Analysis
29. Journal of Computational Mathematics
30. Journal of KSIAM
31. Journal of the Indian Institute of Science
32. Journal of the Indonesian Mathematical Society
33. Kodai Mathematical Journal
34. Korean Journal of Computational and Applied Mathematics
35. Kyungpook Mathematical Journal
36. Kyushu Journal of Mathematics
37. La Matematica
38. Libertas Mathematica
39. Mathematica Persica Meddebiser
40. Mathematica Notae Boletin del
41. Mathematical Communications
42. Mathematical Reports
43. Mathematical Inequalities and Applications
44. Mathematics Journal of Toyama University
45. Mathematics Notes from Washington State University
46. Nihonkai Mathematical Journal
47. Nonlinear Analysis Forum
48. Nonlinear Functional Analysis and Applications
49. Notas de Álgebra y Análisis

Journal of Inequalities in Pure and Applied Mathematics
| 50. | Octogone Mathématiques Journal |
| 51. | Politecnico LeidensZeitschrift für Mathematika |
| 52. | Politecnico Di Trieste |
| 53. | Protocolllo di Matematica |
| 55. | Publications de l'Institut Mathématique |
| 56. | Publications of the Faculty of Electrical Engineering, University of Belgrade Series: Mathematics |
| 57. | Rendiconti dell'Istituto di Matematica dell'Università di Trieste |
| 59. | Revista de Matemática e Estatística |
| 60. | Revista Matemática: Iberoamericana |
| 61. | Revista Matemática: Complutense |
| 62. | Revista da Unión Matemática Argentina |
| 63. | Rivista di Matematica della Università di Parma |
| 64. | Portugaliae Mathematica |
| 65. | Publicaciones Matemáticas |
| 66. | Scientia, Series A: Mathematical Sciences |
| 67. | Samara State University Journal |
| 68. | Shrock Journal of Mathematics |
| 69. | Studia Mathematica |
| 70. | SUT Journal of Mathematical Sciences |
| 71. | Taiwanese Journal of Mathematics |
| 72. | Tamsui Oxford Journal of Mathematical Sciences |
| 73. | The Journal of the Indian Academy of Mathematics |
| 74. | Yokohama Mathematical Journal |
| 75. | Turkish Journal of Mathematics |
| 76. | Yokohama Mathematical Journal |
2002 saw JIPAM implementing its new policy to put papers on the website once they were fully processed. In some cases, this has reduced the publication waiting time to within a month of a paper being accepted. In a few instances, the time between submission of a paper and publication has been less than two months. With these results, it is no wonder that submissions to JIPAM are increasing. It is now recognized as one of the quality journals in Mathematical Inequalities. To cope with the expanding number of submissions, the JIPAM editorial board in December 2003, consisted of 63 editors, and 2 managing editors. With the increasing number of submissions, the number of papers being published has also greatly increased.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of submissions</th>
<th>No. of papers published</th>
<th>No. of issues published</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>23</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>2000</td>
<td>52</td>
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<td>38</td>
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<tr>
<td>2002</td>
<td>155</td>
<td>84</td>
<td>5</td>
</tr>
<tr>
<td>2003</td>
<td>178</td>
<td>109</td>
<td>5</td>
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**GI8 Conference**

The General Inequalities meetings have a long tradition extending to almost thirty years. The first 7 meetings were held in the Mathematical Research Institute at Oberwolfach. The 7th meeting was organized in 1995. Due to the long time having elapsed since this meeting and the growing interest in inequalities, the Scientific Committee of GI7 (consisting of Professors Catherine Bandle (Basel), W. Norrie Everitt (Birmingham), László Losonczi (Debrecen), and Wolfgang Walter (Karlsruhe)) agreed that the 8th General Inequalities meeting be held in Hungary.

It took place from September 15 to 21, 2002, at the De La Motte Castle in Noszvaj and was organized by the Institute of Mathematics and Informatics of the University of Debrecen. The 36 participants came from Australia (4), Canada (1), Czech Republic (1), Germany (4), Hungary (9), Japan (2), Poland (3), Romania (3), Switzerland (2), Sweden (3), United Kingdom (1), and the United States of America (3).

We are very pleased to report that the Scientific Committee appointed JIPAM to publish the Proceedings of this prestigious conference. The selected papers presented at GI8 are (see also [http://jipam.vu.edu.au/issues.php?op=viewissue&issue=74](http://jipam.vu.edu.au/issues.php?op=viewissue&issue=74))
The present issue of JIPAM is devoted to the Proceedings of the GI8 conference held in the period of September 15 to 21, 2002, at the De La Motte Castle in Noszvaj, Hungary.

   Compiled by Zoltán Páles

50. Convolution Inequalities and Applications
   Saburou Saitoh, Wu-Kin Tuan and Masahiro Yamamoto

51. The Hardy-Landau-Littlewood Inequalities with Less Smoothness
   Constantin P. Niculescu and Constantin Buse

52. Continuity Properties of Convex-type Set-Valued Maps
   Kamil K. Nikodem

53. Carleman's Inequality - History, Proofs and Some New Generalizations
   Maria Johansson, Lars-Erik Persson and Anna Wedestig

54. Andersson's Inequality and Best Possible Inequalities
   A.M. Fink

55. On Some Results Involving the Cebyshev Functional and Its Generalisations
   P. Coroneo

56. Separation and Disconjugacy
   R.C. Brown

57. New Norm Type Inequalities for Linear Mappings
   Saburou Saitoh

58. An Integral Approximation in Three Variables
   A. Safa

59. On Some Spectral Results Relating to the Relative Values of Means
   C.G.M. Pearce

60. On Zeros of Reciprocal Polynomials of Odd Degree
   Pirooka Lakatos and Laszlo Losoncz

61. Some New Hardy Type Inequalities and their Limiting Inequalities
   Anna Wloestig

Other Issues
- Volume 1, Issue 1, 2000
- Volume 1, Issue 2, 2000
- Volume 2, Issue 1, 2001
- Volume 2, Issue 2, 2001
- Volume 3, Issue 1, 2002
- Volume 3, Issue 2, 2002
- Volume 3, Issue 3, 2002
- Volume 3, Issue 4, 2002
- Volume 3, Issue 5, 2002
- Volume 4, Issue 1, 2003
- Volume 4, Issue 2, 2003
- Volume 4, Issue 4, 2003
- Volume 4, Issue 5, 2003
Due to the exponentially increasing number of pages on the JIPAM website, it was gradually becoming slower and slower, making changes and additions to it more and more difficult. For these reasons, in March 2004, we completely overhauled the old website and implemented a new system with a fully searchable database, which will be presented in the next RGMIA report.

Below for posterity are some images of JIPAM as it was in December, 2003. These pages can still be accessed at http://jipam-old.vu.edu.au

Main Page
Volume 4, Issue 5, 2003

03. Rational Identities and Inequalities Involving Fibonacci and Lucas Numbers
   José Luis Díaz-Barriga

04. On a q-Analogue of Sándor’s Function
   C. Adiga, T. Kim, D. S. Rim and Syed Noor Fatima

05. Beurling Vectors of Quasilinear Systems of Differential Operators
   Ramesh Chell

06. Some Estimates for the Integral Taylor’s Remainder
   Lazzar Berdysheva

07. Some Companions of the Grüss Inequality in Inner Product Spaces
   S.S. Dragomir

08. Interpolation Functions of Several Matrix Variables
   Y. Amour

09. Existence and Global Attractivity of Periodic Solutions in n-Species Food-Chain System with Time Delays
   Qiming Liu and Haixian Zhou

10. An Elementary Proof of the Preservation of Lipschitz Constants by the Meyer-König and Zeller Operators
    Tiberiu Filip

11. On Grüss Type Inequalities of Dragomir and Fedorov
    J.E. Pecaric and At. Tepea

12. Iterative Solution of Nonlinear Equations of Hammerstein Type
    H. Zegzegh

13. An Entropy Power Inequality for the Binomial Family
    Peter Hameroko and Christophe Vignat

H. Bar
J. Blanken
P. Buren
P. Cipolla
S. H. Chong
L. Dobratić
S. S. Dragomir
N. Elezović
A. M. Fink
A. Florea
T. Furuša
L. Gajic
H. Gauchman
C. Giorga
F. Hansen
T. Hinton
A. Laforgia
L. Lai
C. K. Li
L. L presti
A. Lupas
R. Madras
T. Mills
G. V. Milovanovic
R. N. Mohapatra
B. Mond
M. Z. Nashed
C. P. Niculescu
J. Ohtsu
B. Opic
G. Paczka
J. Palos
C. E. M. Pearce
J. Pečarić
E. Pekonen
L. Pick
I. Pejsa
S. Pintea
F. Oh
A.G. Ramm
T.M. Rassias
A. Ribeiro
S. Saïdi
J. Sándor
S. P. Singh
A. Sfiz
H. M. Srivastava
K. B. Stolarsky
G. P. H. Styan
L. Toth
R. Verma
F. Zhang
94. On Hardy-Hilbert's Integral Inequality with Parameters  
   Leqing He, Mingzhe Guo and Weijian Jia

95. Generalized Inequalities for Indefinite Forms  
   Fatih B. Sadi

96. Some Remarks on Lower Bounds of Chebyshev's Type for Half-lines  
   F.D. Lesley and V.I. Razar

97. A Study on Almost Increasing Sequences  
   Huseyn Bor

98. Asymptotic Behaviour of Some Equations in Orlicz Spaces  
   D. Meskine and A. Elmahi

99. Generalization of a Result for Cesàro Series on the L¹ Norm  
   Józef Nemeth

100. On Integral Forms of Generalized Mathieu Series  
     P. Coroan and C.T. Lenard

101. Ostrowski-Grüss type inequalities in Two Dimensions  
     Nezad Ujovic

102. Convex Functions in a Half-plane  
     Nicolae N. Pandu and Nicolae R. Pastu

103. Some Hardy Type Inequalities in the Heisenberg Group  
     Yazhou Hua and Pengcheng Niu

104. On the Stability of a Class of Functional Equations  
     Belaid Broukhène

105. Kantorovich Type Inequalities for $1 > p > 0$  
     Meiko Siga

106. Linear Elliptic Equations and Gauss Measure  
     L. di Blasio

107. A Note on Integral Inequalities and Embeddings of Besov Spaces  
     Moritz Kassmann

108. New Weighted Multivariate Grüss Type Inequalities  
     B.G. Pachpatte

     (2002), Article 63  
     E.J.M. Veling
Volume 4, Issue 4, 2003

64. **Neighbourhoods and Partial Sums of Starlike Functions Based on Ruscheweyh Derivatives**
   Thomas Rass, K.G. Subramanian and G. Murugusundaramoorthy

65. **Spatial Behaviour for the Harmonic Vibrations in Plates of Kirchhoff Type**
   Cira D’Apice and Stan Chenta

66. **Inclusion Theorems for Absolute Summability Methods**
   H. S. Özarslan

67. **On Generalized Monotone Multifunctions with Applications to Optimality Conditions in Generalized Convex Programming**
   A. Hassouni and A. Juddar

68. **Weighted Geometric Mean Inequalities Over Cones in SFPS**
   Babita Gupta, Prankaj Jain, Lars-Erik Persson and Anna Wedestig

69. **Inequalities for the Transformation Operators and Applications**
   M.G. Ramm

70. **Some Inequalities Associated with a Linear Operator Defined for a Class of Multivalent Functions**
   V. Ravichandran, N. Seenivasagan and H.M. Sivasubramaniam

71. **On Fisher Information Inequalities and Score Functions in Non-invertible Linear Systems**
   C. Vignat and J.F. Barchar

72. **Non-autonomous Differential Subordinations Related to a Sector**
   Sukhjit Singh and Sushma Gupta

73. **A Variant of Jensen’s Inequality**
   A. McKee and M. Mercer

74. **The Spread of the Shape Operator as Conformal Invariant**
   Bogdan D. Suceava

75. **A Hölder Inequality for Holomorphic Functions**
   Angel Stan

76. **Certain Bounds for the Differences of Means**
   Peng Gao

77. **Notes on Qi Type Integral Inequalities**
   Lazhar Boustifilla

78. **Some New Inequalities for Trigonometric Polynomials with Special Coefficients**
   Zvonko Totovski
<table>
<thead>
<tr>
<th>Article</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>Ostrowski Type Inequalities for Isotonic Linear Functionals</td>
<td>S.S. Dragomir</td>
</tr>
<tr>
<td>69</td>
<td>A Note on Azriel Type Inequalities</td>
<td>Vania Maqueti</td>
</tr>
<tr>
<td>70</td>
<td>On Short Sums of Certain Multiplicative Functions</td>
<td>Olivier Bordelles</td>
</tr>
<tr>
<td>71</td>
<td>A Monotonicity Property of Ratios of Symmetric Homogeneous Means</td>
<td>Peter A. Hasto</td>
</tr>
<tr>
<td>72</td>
<td>Coefficient Estimates for Certain Classes of Analytic Functions</td>
<td>Shigeyoshi Owa and Junichi Nishiwaki</td>
</tr>
<tr>
<td>73</td>
<td>A Monotonicity Property of the Gamma Function</td>
<td>Hendrik Vogt and Jürgen Voigt</td>
</tr>
<tr>
<td>74</td>
<td>A Hölder-type Inequality for Positive Functionals on $\ell^p$-Algebras</td>
<td>Karim Boulabiar</td>
</tr>
<tr>
<td>75</td>
<td>A New Inequality Similar to Hilbert's Inequality</td>
<td>Bicheng Yang</td>
</tr>
<tr>
<td>76</td>
<td>Extensions of Hwang's Inequality</td>
<td>Ming-Heng Fang and Degas Yang</td>
</tr>
<tr>
<td>77</td>
<td>New Upper and Lower Bounds for the Cabysov Functional</td>
<td>P. Carone and S.S. Dragomir</td>
</tr>
<tr>
<td>78</td>
<td>A Note on Trace Inequality for Products of Hermitian Matrix Power</td>
<td>Zheng Peng Yang and Xiao Xia Feng</td>
</tr>
<tr>
<td>79</td>
<td>Pointwise Error Estimate for a Noncoercive System of Quasi-Variational Inequalities Related to the Management of Energy Production</td>
<td>Messaoud Boumbrène</td>
</tr>
<tr>
<td>80</td>
<td>Reverse Convolution Inequalities and Applications to Inverse Heat Source Problems</td>
<td>Saburou Saitoh, Yu Kim Tuan and Masahiro Yamamoto</td>
</tr>
<tr>
<td>81</td>
<td>Sufficient Conditions for Starlike Functions of Order $\alpha$</td>
<td>V. Ravichandran, C. Selvaraj and R. Rajagopal</td>
</tr>
<tr>
<td>82</td>
<td>Improved GA-Convexity Inequalities</td>
<td>Razvan A. Satomaru</td>
</tr>
<tr>
<td>83</td>
<td>Strong Convergence Theorems for Iterative Schemes with Errors for Asymptotically Demicontractive Mappings in Arbitrary Real Normed Linear Spaces</td>
<td>Yeol Je Cho, Hakjun Zhou and Shin Min Kang</td>
</tr>
</tbody>
</table>
Asymptotic Expansion of the Equipoise Curve of a Polynomial Inequality

Roger B. Eggleton and William P. Galvin

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Last Issue for 2001

Journal of Inequalities in Pure and Applied Mathematics

Editor-in-Chief: Sever S. Dragomir

Volume 2, Issue 3, 2001

27. Generalized Auxiliary Problem Principle and Solvability of a Class of Nonlinear Variational Inequalities Involving C-cocoercive and Co-Lipschitzian Mappings
   Ram U. Verma

28. On Some Generalizations of Steffensen's Inequality and Related Results
   P. Cerone

29. A Weighted Analytic Center for Linear

Other Issues
Volume 1, Issue 1, 2000
Volume 1, Issue 2, 2000
Volume 2, Issue 1, 2001
Volume 2, Issue 2, 2001
Volume 2, Issue 3, 2001
Volume 3, Issue 1, 2002
Volume 3, Issue 2, 2002
Volume 4, Issue 1, 2003
Volume 4, Issue 2, 2003
Volume 4, Issue 4, 2003
Aims and Scope
Editors of JIPAM
Instructions to Authors
Contact Us
Database
Managerial Board
About PDF Files
Feedback
Site Map
Copyright
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>A Generalization of Young's Inequality for Upper Matrix Inequalities</td>
<td>L. Pressman and S. Jibun</td>
</tr>
<tr>
<td>30</td>
<td>Good Lower and Upper Bounds on Binomial Coefficients</td>
<td>Panteleimon Stanica</td>
</tr>
<tr>
<td>31</td>
<td>Improvement of an Ostrowski Type Inequality for Monotonic Mappings and its Application for Some Special Means</td>
<td>S.S. Dragomir and M.L. Fang</td>
</tr>
<tr>
<td>32</td>
<td>On the Utility of the Telyakovskii's Class S</td>
<td>Laszlo Londer</td>
</tr>
<tr>
<td>33</td>
<td>L' Hospital Type Rules for Oscillation with Applications</td>
<td>Icatif Pinelis</td>
</tr>
<tr>
<td>34</td>
<td>Matrix and Operator Inequalities</td>
<td>Fadi M. Dammam</td>
</tr>
<tr>
<td>35</td>
<td>Consequences of a Theorem of Erdos-Peck</td>
<td>Laurentiu Panaitopol</td>
</tr>
<tr>
<td>36</td>
<td>On a Reverse of Jessen's Inequality for Isotonic Linear Functionals</td>
<td>S.S. Dragomir</td>
</tr>
<tr>
<td>37</td>
<td>Improving Properties for Measures on $\mathbb{R}^n$ Supported on Homogeneous Surfaces in Some Non Elliptic Cases</td>
<td>E. Ferreira, I. Godoy and M. Urcidio</td>
</tr>
<tr>
<td>38</td>
<td>Some Properties of the Series of Composed Numbers</td>
<td>Laurentiu Panaitopol</td>
</tr>
</tbody>
</table>

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# List of Volumes

## Journal of Inequalities in Pure and Applied Mathematics

**Editor-in-Chief:** Steer S. Dragomir

### Papers

<table>
<thead>
<tr>
<th>Volume 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Issue 1, 2000</td>
</tr>
<tr>
<td>• Issue 2, 2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Issue 1, 2001</td>
</tr>
<tr>
<td>• Issue 2, 2001</td>
</tr>
<tr>
<td>• Issue 3, 2001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Issue 1, 2002</td>
</tr>
<tr>
<td>• Issue 2, 2002</td>
</tr>
<tr>
<td>• Issue 3, 2002</td>
</tr>
<tr>
<td>• Issue 4, 2002</td>
</tr>
<tr>
<td>• Issue 5, 2002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Issue 1, 2003</td>
</tr>
<tr>
<td>• Issue 2, 2003</td>
</tr>
<tr>
<td>• Issue 3, 2003</td>
</tr>
<tr>
<td>• Issue 4, 2003</td>
</tr>
<tr>
<td>• Issue 5, 2003</td>
</tr>
</tbody>
</table>

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- L. Pick
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- F. Qi
- A. G. Ramm
- M. Rassias
- R. Rubnov
- S. Salah
- S. Sandor
- S. P. Singh
- A. Kılıç
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With the rapid advancement of internet technologies and the accessibility of the worldwide web has come a trend of electronic journals, such as JIPAM. Below is an article by Dr. Steve Lawrence outlining the advantages of electronic journals over the traditional printed journals.

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**Online or Invisible?**

Steve Lawrence  
NEC Research Institute

Articles freely available online are more highly cited. For greater impact and faster scientific progress, authors and publishers should aim to make research easily accessible.

The volume of scientific literature typically far exceeds the ability of scientists to identify and utilize all relevant information in their research. Improvements to the accessibility of scientific literature, allowing scientists to locate more relevant research within a given time, have the potential to dramatically improve communication and progress in science. With the web, scientists now have very convenient access to an increasing amount of literature that previously required trips to the library, inter-library loan delays, or substantial effort in locating the source. Evidence shows that usage increases when access is more convenient [2], and maximizing the usage of the scientific record benefits all of society.

Although availability varies greatly by discipline, over a million research articles are freely available on the web. Some journals and conferences provide free access online, others allow authors to post articles on the web, and others allow authors to purchase the right to post their articles on the web.

In this article, we investigate the impact of free online availability by analyzing citation rates. We do not discuss methods of creating free online availability, such as time-delayed release or publication membership. Conference charges. Online availability of an article may not be expected to greatly improve access and impact by itself. For example, efficient means of locating articles via web search engines or specialized search services is required, and a substantial percentage of the literature needs to be indexed by these search services before it is worthwhile for many scientists to use them. Computer science is a forerunner in web availability – a substantial percentage of the literature is online and available through search engines such as Google (google.com), or specialized services such as ResearchIndex [1] (researchindex.org). Even so, the greatest impact of the online availability of computer science literature is likely yet to come, because comprehensive search services and more powerful search methods have only become available recently.

We analyzed 119,924 conference articles in computer science and related disciplines, obtained from DBLP (dblp.uni-trier.de). In computer science, conference articles are typically formal publications and are often more prestigious than journal articles, with acceptance rates at some conferences below 10%. Citation counts and online availability were estimated using ResearchIndex. The analysis excludes self-citations, where a citation is considered to be a self-citation if one or more of the citing and cited authors match.

Figure 1 shows the probability that an article is freely available online as a function of the number of citations to the article, and the year of publication of the article. The results are dramatic. There is a clear correlation between the number of times an article is cited, and the probability that the article is online. More highly cited articles, and more recent articles, are significantly more likely to be online.

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Figure 1: Analysis of 119,924 conference articles in computer science and related disciplines. More highly cited articles, and more recent articles, are substantially more likely to be freely available on the web. The actual percentage of articles available online is greater due to limitations in the extraction of article information from online documents, and limitations in locating articles on the web. Only points with greater than 100 articles are computed.

The mean number of citations to offline articles is 2.7, and the mean number of citations to online articles is 7.03, or 2.6 times greater than the number for offline articles. These numbers mask variations over time – in particular, older articles have more citations on average, and older articles are less likely to be online. When considering articles within each year, and averaging across all years from 1990 to 2000, we find that online articles are cited 4.5 times more often than offline articles.
We also analyzed differences within each publication venue, where multiple years for the same conference are considered as separate venues. We computed the percentage increase in the average number of citations to online articles compared to offline articles. When offline articles were more highly cited, we used the negative of the percentage increase for offline articles. For example, if the average number of citations for offline articles is 2, and the average for online articles is 4, the percentage increase would be 100%. For the opposite situation, the percentage increase would be -100%. Figure 2 shows the results. Averaging the percentage increase across 1,494 venues containing at least five offline and five online articles results in an average of 33% more citations to online articles compared to offline articles published in the same venues (the first, second (median), and third quartiles of the distribution are 58%, 158%, and 361%).

![Figure 2: Analysis of citation rates within publication venues. The graph shows the distribution of the percentage increase for the average number of citations to online articles compared to offline articles. The analysis covers 1,494 publication venues containing at least 5 online and 5 offline articles. For 80% of venues, online articles are more highly cited on average. On average there are 33% more citations to online articles compared to offline articles published in the same venue (the first, second (median), and third quartiles of the distribution are 58%, 158%, and 361%).](image)

The preceding data does not allow us to make conclusions as to the cause of the correlation between high citation rates and online availability. Online articles may be more highly cited because they are easier to access and thus more visible and more likely to be read, or because higher quality articles are more likely to be made available online. Intuitively, it seems likely that the easier availability and improved visibility of online articles plays a significant role. If we assume that articles published in the same venue are of similar quality, then the analysis by venue suggests that online articles are more highly cited because of their easier availability. This assumption is likely to be more valid for top-tier conferences with very high acceptance standards. Restricting the above analysis to the top publication venues by average citation rate results in a similarly dramatic increase in citation rates for online articles. For example, when restricting to the top 20 venues, the average increase in the citation rate for online articles is 206% (the first, second (median), and third quartiles of the distribution are 65%, 244%, and 471%).

Free online availability facilitates access in multiple ways, including online archives, direct connections between scientists or research groups, hassle-free links from email, discussion groups, and other services, indexing by web search engines, and the creation of third-party search services. Free online availability of scientific literature offers substantial benefits to science and society. To maximize impact, minimize redundancy, and speed scientific progress, author and publishers should aim to make research easy to access.

Acknowledgments

Thanks to Gary Flake, Andrew Odlyzko, and David Pernock for useful comments and suggestions.

References


This article may be found online at:

http://www.neci.nec.com/~lawrence/papers/online-nature01/.
RGMIA in the Media

Teamwork adds up to a book

Niki Koulouris

THE MOTTO of Victoria University's mathematical inequalities research group just happens to be a mathematical inequality: the value of the group is greater than the sum of its members.

And the maxim has proved to be a fitting one for the team of six whose extensive output over the past four years has included an international, peer refereed online journal; a website where over 450 associated members have published their work; and the publication of over 80 papers each year.

mathematics, probability theory and stochastics, and numerical analysis

The book is edited by Professor Sever Dragomir, chair in Theory of Inequalities at Victoria University, and Professor Themistocles Rassias from the National Technical University in Athens. Contributors included Professor Dragomir, Doctors John Roumeliotis and Anthony Sofo, Associate Professors Neil Barnett and Pietro Cerone, and doctoral student George Hanna.

VU Vice-Chancellor Professor Jarlath Ronayne, Terry Mills, Professor of Mathematics at La Trobe University, and Professor Dragomir all commended the efforts of RGMIA at the book launch.

Professor Mills described the book as a starting point for any research project on mathematical inequalities.

"The book is yet another example of VU mathematicians putting some order into the study of inequalities," Professor Mills said.

Professor Ronayne said research production had never been more important than in the current climate of cost cutting.

"One sure way we can ensure there are no concessions in research is to publish work of the quality and standard we have seen today," Professor Ronayne said. "It is an expression of what the University is all about.

"As well as teaching, we are here to push forward the frontiers of knowledge. Despite what happens at governmental level, we will double our research income and output at Victoria University."

Professor Ronayne congratulated the research group for the enormous progress it has made in such a short time and also praised

The Research Group in Mathematical Inequalities and their Applications (RGMIA) from the School of Communications and Informatics has now published its first book on mathematical inequalities, comprising a selection of original results.

Ostrowski Type Inequalities and Applications in Numerical Integration was launched at VU's Footscray Park Campus in August and is intended for researchers and graduate students working in the fields of integral inequalities, approximation theory, applied

group chair, Professor Dragomir.

"There is wisdom in getting top researchers to come to the University, but they have to be leaders and mentors as well. Leadership brings added value and that is why Professor Dragomir was appointed."

Professor Dragomir received his doctoral degree in Mathematics from Timisoara University, Romania in 1965 with a dissertation in Best Approximation Theory.

Maths high-flyer continues to fly higher

IT’S been a big year for PhD student Florica Corina Cîntea of Victoria University’s School of Computer Science and Mathematics. In February and April the Romanian mathematician spoke to eminent colleagues at conferences in the Australian Capital Territory. She was then appointed by the School as a research assistant for a higher education equity program. In late August she won a major national award.

The award of Outstanding Woman in Non-Traditional Areas of Work and Study: Higher Education award was presented by the National Centre for Gender and Cultural Diversity, a research centre based at Swinburne University.

The centre describes its annual awards as ‘a celebration of the remarkable achievements of women in non-traditional areas across Australia... these national awards profile and applaud women who have achieved outstanding success in non-traditional areas of work and study.’

Ms Cîntea was nominated for the award by the head of VU’s School of Computer Science and Mathematics, Associate Professor Pietro Cerone. She joined VU in 2001 after being awarded a Commonwealth International Postgraduate Scholarship.

High achiever: Florica Corina Cîntea has an outstanding year.

June 2003

High praise for Victoria University Mathematics researchers

28 April 2004

The launch of the new mathematics books and the revised *Journal of Inequalities in Pure and Applied Mathematics* website has drawn high praise to Victoria University’s School of Computer Science and Mathematics and in particular to Research Centre in Mathematical Inequalities and Applications (RCIMA).

Speaking at the launch at the University’s Footscray Park Campus, Professor Chandler Fitch of the University of Adelaide’s Applied Mathematics Department said the books and website were part of the biggest explosion of mathematics students at Victoria University in the past half-a-century.

Professor Fitch said while Australia has aspirations to have a university ranked in the world’s top 100 it was a tall order given that the budget for Harvard University is well above all the Australian universities combined. However, referring to the work by Victoria University’s academics he said: ‘Individuals are an absolute prerequisite on the world stage.’

Victoria University Vice-Chancellor Liz Harms also spoke glowingly of the researchers’ work. She said: ‘The University has a strong commitment to internationalising its curriculum, and all that that may mean. It is a credit to the School and to RCIMA that concrete activity is happening internationally, beyond signatures in agreements.

The books launched were:

* Some Generalized Type Inequalities and Applications by S. S. Dragomir;*  
* Computational Techniques for the Numerical Solution of Systems by Anthony Gaff;*  

These volumes were written in conjunction with colleagues from Queensland University of Technology and include chapters from Victoria University’s Dr John Peckmalles, Dr Rumen Andev, Dr Matt Bakalian and Professor Cîntea, and PhD student Florica Cîntea and George Blocation.

Professor Dragomir said that mathematical inequalities could be used to help provide the solution to many applied science and engineering problems.

Professor Fitch applauds Professor Dragomir for being the ‘creative spring’ behind the maths researchers at Victoria University and said that associate Professor Cerone’s book ‘has wonderful insights on the chapter titmest from different areas.

The Journal of Inequalities in Pure and Applied Mathematics (JIPAM) website is an electronic peer-refereed journal published by the School of Computer Science and Mathematics of Victoria University. It was started in September 1999 and includes an international editorial board of 70 world-renowned researchers.
Florica (one of our PhD students) wins award!

It’s been a big year for PhD student Florica Cirstea of Victoria University’s School of Computer Science and Mathematics.

In February and April the Romanian mathematician spoke to eminent colleagues at conferences in the Australian Capital Territory. She was then appointed by the School as a research assistant for a higher education equity program. And in late August she won a major national award.

The award of Outstanding Woman in Non-Traditional Areas of Work and Study: Higher Education award was presented by the National Centre for Gender and Cultural Diversity, a research centre based at Swinburne University.

The centre describes its annual awards as ‘a celebration of the remarkable achievements of women in non-traditional areas across Australia... those national awards profile and applaud women who have achieved outstanding success in non-traditional areas of work and study.’

Ms Cirstea was nominated for the award by the head of VU’s School of Computer Science and Mathematics, Associate Professor Pietro Cerone. She joined VU in 2001 after being awarded a Commonwealth International Postgraduate Scholarship. Further reading: Nexus, June 2002

Research links with Korea

Professor Sever Dragomir, the School’s research chair in Mathematics and the Editor-in-Chief of the Journal of Inequalities in Pure and Applied Mathematics, visited Korea with the support of the Binam Post Scheme (2002) of the Korea Federation of Science & Technology Societies and the VU Discovery Research Grant Scheme (2002). In collaboration with Professor Yed J. Cho of the Gyeongsang National University in Jinju, and others, Professor Dragomir’s three month visit was widely acknowledged as being a great success resulting in close ties with our Korean colleagues.

We are very pleased to report that in the period of July 15, 2003 to October 5, 2003, the visit resulted in:

- Collaboration and research conducted under the auspices of the "Memorandum of Understanding" between Victoria University of Technology and Gyeongsang National University.
- 14 research papers that have been already completed.
- 4 invited talks to different Mathematics Departments in the southern part of Korea.
- 5 local talks to postgraduate students.

For more information see the RIGMA web page.

<back to top>
New Book on Summation of Series

*Associate Professor Anthony Sale* has announced publication of a new book entitled *Computational Techniques for the Summation of Series*.

*Computational Techniques for the Summation of Series* is a text on the representation of series in closed form. The book presents a unified treatment of summation of series and series using function theoretic methods. A technique is developed based on residue theory that is useful for the summation of series of both hypergeometric and non-hypergeometric type. The theory is supported by a large number of examples. The book is both a blending of continuous and discrete mathematics and, in addition to its theoretical base, it also places many of the examples in an applicable setting. This text is excellent as a textbook or reference book for a senior or graduate level course on the subject, as well as a reference for researchers in mathematics, engineering and related fields.


*New Book on Gronwall type inequalities*

*Professor Sever Dragomir* has recently published a book on mathematical inequalities for Gronwall type functions.

Gronwall type integral inequalities of one variable for real functions play a very important role in the Qualitative Theory of Differential Equations. The main aim of the present research monograph is to present some natural applications of Gronwall inequalities with nonlinear kernels of Lipschitz type of the problems of boundedness and convergence to zero at infinity of the solutions of certain Volterra integral equations. Stability, uniform stability, uniform asymptotic stability and global asymptotic stability properties for trivial solution of certain differential system of equations are also investigated.

More details can be found at [http://www.avapublishers.com/detailed_search.asp?id=1000338278](http://www.avapublishers.com/detailed_search.asp?id=1000338278).

School of Computer Science and Mathematics News

Research Students

Based in the School of Computer Science and Mathematics, Victoria University, the members of the RGMIA are supporting the following postgraduate students in their mathematical research:

- **F.C. Cirstea** is the recipient of a government funded international research scholarship and already has fifteen publications in some of the most prestigious journals in Mathematical Analysis and Applications. She will continue, under our supervision, to investigate the problem of existence and uniqueness for the solutions of different partial differential equations modeling practical problems in fluid mechanics, and other physical phenomena related to the equilibrium of anisotropic continuous media etc.

- **G. Hanna** has published eight papers in the area of multidimensional quadrature. This important topic impacts many fields that involve the study of multiple dimensions.

- **R. Moore** is investigating sound source identification- in particular recognition of musical instruments. The aim is to refine the process of building a timbral signature for instruments of each type to enable classification. The work is multidisciplinary drawing on the physics of sound, psycho-physics and underpinned by signal processing and mathematics for the extraction and analysis of audio data.

- **G. Sorrentino** is investigating the mathematical modeling of pricing of financial instruments. In particular the Black-Scholes pricing model will be examined and an investigation of extensions and solution methodologies will be undertaken. This will involve an analysis and development of efficient numerical solution methodologies involving inequalities and approximation to provide error bounds.

- **R. Summit** is investigating the dependency of the reliability of a motor vehicle on the reliability of its numerous components. Failure data from an Australian automobile manufacturer are being analyzed in this research. Cost models for honoring a two-year/50,000km warranty are being developed. This will be done on a component or subsystem level, as well as a whole system level. Numerical methods are available to solve the renewal equation. It is anticipated that both in-warranty and post-warranty claims will be considered and models developed for each case. The two-year warranty model developed will then be extrapolated to estimate the cost of three and five year warranties.
Editorial Appointments

In the last few years, key members of the RGMIA at Victoria University have been appointed to the editorial boards of international journals. They are the following:

<table>
<thead>
<tr>
<th>Member</th>
<th>Journal</th>
<th>Publisher/Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. Cerone</td>
<td>Nonlinear Functional Analysis and Applications</td>
<td>Korea</td>
<td>2003+</td>
</tr>
<tr>
<td>S.S. Dragomir</td>
<td>Advances in Nonlinear Variational Inequalities</td>
<td>International Publications, USA.</td>
<td>2001+</td>
</tr>
<tr>
<td>S.S. Dragomir</td>
<td>Archives of Inequalities and Applications</td>
<td>Dynamic Publishers, USA</td>
<td>2003+</td>
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<tr>
<td>S.S. Dragomir</td>
<td>East Asian Mathematical Journal</td>
<td>Korea</td>
<td>2002+</td>
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<tr>
<td>S.S. Dragomir</td>
<td>Nonlinear Analysis Forum</td>
<td>Korea</td>
<td>2001+</td>
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<tr>
<td>S.S. Dragomir</td>
<td>Nonlinear Functional Analysis and Applications</td>
<td>Korea</td>
<td>2002+</td>
</tr>
<tr>
<td>S.S. Dragomir</td>
<td>Octogon Mathematical Magazine</td>
<td>Fulgur Publishers, Romania.</td>
<td>2001+</td>
</tr>
</tbody>
</table>
Seminars and Conferences

Seminars

The RGMIA seminars continued throughout last year and this year, with a number of international guests and local researchers and students as presenters.

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Prof. A.M. Rubinov</td>
<td>University of Ballarat</td>
<td>Hadamard type inequality for quasiconvex functions in higher dimensions</td>
</tr>
<tr>
<td>♦ A. Professor J.J. Koliha</td>
<td>The University of Melbourne</td>
<td>Weighted Opial inequalities</td>
</tr>
<tr>
<td>♦ Professor S. Kumar</td>
<td>Victoria University of Technology</td>
<td>Tosoro Rural Game Strategy - An Application in Operations Research</td>
</tr>
<tr>
<td>♦ A. Professor P. Cerone</td>
<td>Victoria University of Technology</td>
<td>On $HH$-Divergence and its Connection with $f$-Divergence</td>
</tr>
<tr>
<td>♦ Ms. Marcia Ricci Pinheiro</td>
<td>Victoria University of Technology</td>
<td>$S$ - Convexity and the Hermite-Hadamard Inequality</td>
</tr>
<tr>
<td>♦ Prof. S.S. Dragomir</td>
<td>Victoria University of Technology</td>
<td>Ostrowski Type Inequalities for Convex Functions Defined on Linear Spaces and Applications for Semi-Inner Products</td>
</tr>
<tr>
<td>♦ A. Professor P. Cerone</td>
<td>Victoria University of Technology</td>
<td>Series Involving Sums of Powers of Roots of Characteristic Equations</td>
</tr>
<tr>
<td>♦ Ms. F.-C. Şt. Cîrstea</td>
<td>Victoria University of Technology</td>
<td>Existence and Uniqueness of Positive Solutions to a Semilinear Elliptic Problem in $\mathbb{R}^N$</td>
</tr>
<tr>
<td>♦ Dr. A. Sofo</td>
<td>Victoria University of Technology</td>
<td>Hilbert's 16th Problem and its Ramifications</td>
</tr>
<tr>
<td>♦ Professor Feng Qi</td>
<td>Dept. of Math., Jiaozou Institute of Technology</td>
<td>The Extended Mean Values: Definition, Properties, Monotonicities, Comparison, Convexities, Generalizations &amp; Applications</td>
</tr>
<tr>
<td>♦ Mr. Ian Graves</td>
<td>Defence Science and Technology Org.</td>
<td>New Inequalities for Convexity in Geometric Tomography</td>
</tr>
<tr>
<td>♦ A. Professor H. Shioya</td>
<td>Muroran Institute of Technology, Japan</td>
<td>An Information Divergence Using The Hermite-Hadamard Inequality</td>
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<tr>
<td>♦ Professor Terry Mills</td>
<td>La Trobe University, Bendigo</td>
<td>Mathematics and Health Care Management</td>
</tr>
<tr>
<td>♦ Dr. J. Shi</td>
<td>Victoria University of Technology</td>
<td>The Direct Method for Adaptive Feed-Forward Vibration Control of Magnetic Bearing Systems</td>
</tr>
<tr>
<td>Author</td>
<td>Affiliation</td>
<td>Research Title</td>
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<tr>
<td>Ms. F.-C. Şt. Cîrstea</td>
<td>Victoria University of Technology</td>
<td>Solutions with Boundary Blow-up for Logistic Equations</td>
</tr>
<tr>
<td>Dr. Adam Kucera</td>
<td>Commonwealth Bank of Australia</td>
<td>Pricing Path Dependant Options</td>
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<tr>
<td>A. Professor P. Cerone</td>
<td>Victoria University of Technology</td>
<td>Results Concerning the Cebyşev Functional</td>
</tr>
<tr>
<td>Dr. J. Shi and Dr. W.S. Lee</td>
<td>Victoria University of Technology</td>
<td>IMC-PID Controllers for First-Order Plus Dead-Time Processes: A Simple Design with Guaranteed Phase Margin</td>
</tr>
<tr>
<td>Mr. Martin Kjaer</td>
<td>Aalborg University, Denmark</td>
<td>Modelling of a Four Wheeled Mobile Robot Using Lagrange's Equation</td>
</tr>
<tr>
<td>Mr. Steven Trpkovski</td>
<td>OTRL, Victoria University of Technology</td>
<td>Dual Strain and Temperature Sensor Using a Fluorescence Intensity Ratio in Er$^{3+}$-doped Fibre Combined with a Fibre Bragg Grating</td>
</tr>
<tr>
<td>Dr. Robin Pope</td>
<td>Monash University</td>
<td>The Illusion of Risk Effects in Stochastic Dynamic Modelling: How to really include them</td>
</tr>
<tr>
<td>Prof. Ferdinand Österreicher</td>
<td>Institute of Mathematics, University of Salzburg, Austria</td>
<td>Csiszár's $f$-Divergences - Basic Properties</td>
</tr>
<tr>
<td>Prof. Ferdinand Österreicher</td>
<td>Institute of Mathematics, University of Salzburg, Austria</td>
<td>$f$-Divergences - Representation Theorem and Metrizability</td>
</tr>
<tr>
<td>Prof. Ferdinand Österreicher</td>
<td>Institute of Mathematics, University of Salzburg, Austria</td>
<td>Distances Based on the Perimeter of a Testing Problem</td>
</tr>
</tbody>
</table>
Conferences

A few of the RGMIA members at Victoria University delivered addresses at a number of International institutions in the period September 2001 - December 2003. The presenter, titles and the list of host institutions are as follows:

<table>
<thead>
<tr>
<th>Title</th>
<th>Presenter</th>
<th>Conference</th>
</tr>
</thead>
<tbody>
<tr>
<td>New bounds for the generalised trapezoidal rule for the Riemann-Stieltjes Integral and applications</td>
<td>P. Cerone</td>
<td>International Conference on Statistics, Combinatorics and Related Areas (SCRA(8)) Wollongong, Australia.</td>
</tr>
<tr>
<td>On some results involving the Cebysev functional and its generalisations</td>
<td>P. Cerone</td>
<td>General Inequalities 8, Nosvaj, Hungary.</td>
</tr>
<tr>
<td>An Approximation for the Finite-Fourier Transform of Two Independent Variables</td>
<td>George Hanna</td>
<td>Fourth International Conference on Modelling and Simulation, 11-13 November 2002 (Melbourne)</td>
</tr>
</tbody>
</table>
Visitors to the RGMIA

A number of distinguished researchers visited the RGMIA at Victoria University from September 2001 to December 2003. In what follows, we include a brief description of their work and other details.

Alexander M. Rubinov
is a Professor of Mathematics at the School of Information Technology and Mathematical Sciences, University of Ballarat. He is also the Director of the Centre for Informatics and Applied Optimization. His current research interests include Global optimization, Abstract convexity, Monotonic analysis, Non-smooth analysis and optimization, Economic equilibrium and dynamics and Clustering. He visited the RGMIA late last year to give a talk entitled “Hadamard type inequality for quasiconvex functions in higher dimensions”. For more information about Professor Rubinov and his work, please visit the website http://www.ballarat.edu.au/~arubinov/index.html

Jerry J. Koliha
is an Associate Professor of Mathematics at the University of Melbourne. His research interests include Functional Analysis, Linear algebra and matrix analysis, Differential equations in abstract spaces, Theory of inequalities and Algebra - generalized inverses and idempotents in rings. He is the Production Editor of the Journal of the Australian Mathematical Society and a referee for many journals. Prof. Koliha visited in September last year to present a talk on Weighted Opial Inequalities. For more information, see (http://www.ms.unimelb.edu.au/~jjk/).
**Santosh Kumar**

is the Visiting Professor of Operations Research in the School of Communications and Informatics. He is an Associate Editor of the *Asian Pacific Journal for Operational Research*. Professor Kumar has returned to Melbourne after serving as Professor and Chair of Applied Mathematics for six years at the National University of Science and Technology (NUST), Bulawayo, Zimbabwe. Prior to his appointment at NUST, he served on the Faculty in the Statistics and Operations Research Department at RMIT.

![Santosh Kumar](image)

**Hiroyuki Shioya**

is an Associate Professor at the Muroran Institute of Technology, Japan. He visited the RGMIA in March this year for one week. His research interests include: Information theoretic applications using inequalities of information divergences, Mathematical analysis of Csiszár's $f$-divergence, and Learning theory for neural networks using information theoretical measures. The title of Prof. Shioya’s seminar was “An Information Divergence Using The Hermite-Hadamard Inequality”.

![Hiroyuki Shioya](image)

**Feng Qi**

is Professor and Head of the Department of Applied Mathematics and Informatics, Jiaozuo Institute of Technology, China.

His main interest comprises Theory of Inequalities for means and Special Functions. For further details on his extensive research activity and many achievements, please visit the website [http://rgmia.vu.edu.au/qi.html](http://rgmia.vu.edu.au/qi.html)

![Feng Qi](image)
**Terry Mills**

from La Trobe University, Bendigo has been a Professor since 1993. He is a member of the Australian Mathematical Society, the Statistical Society of Australia, American Mathematical Society and Indonesian Mathematical Society.

His main interest is shared between Approximation Theory and Mathematical Modeling. For further details on his teaching and research activity please see [http://www.bendigo.latrobe.edu.au/mte/maths/staff/mills/](http://www.bendigo.latrobe.edu.au/mte/maths/staff/mills/)

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**Adam Kucera**

is currently with EdgeCap. He visited us for 10 weeks to work on the mathematical modeling of pricing financial instruments.

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**Prof. Ferdinand Österreicher**

from the University of Salzburg visited the RGMIA for his 6 month Sabbatical Leave beginning on September 2003. During his visit he gave a number of three seminars on various subjects related with Csiszar $f$- divergences. The contents of these seminars may be viewed at: [http://rgmia.vu.edu.au/newstuff.htm](http://rgmia.vu.edu.au/newstuff.htm) and they are as follows:

- **Prof. Ferdinand Österreicher**
  Institute of Mathematics, University of Salzburg, Austria
  "Distances Based on the Perimeter of a Testing Problem"

- **Prof. Ferdinand Österreicher**
  Institute of Mathematics, University of Salzburg, Austria
  "$f$-Divergences - Representation Theorem and Metrizability"
  October 30, 2002.

- **Prof. Ferdinand Österreicher**
  Institute of Mathematics, University of Salzburg, Austria
  "Csiszár's $f$-Divergences - Basic Properties"
  October 22, 2002
Photos

Left to right: Mr. George Hanna, Prof. S.S. Dragomir, Ms. Florica Şt. Cîrstea, Dr. Adam Kucera, Mr. Gabriel Sorrentino, Ms. Gulay Avsar, Assoc. Prof. Pietro Cerone, Dr. John Roumeliotis.

Left to right: Assoc. Prof. Pietro Cerone, Mr. Alan Brown, Prof. Santosh Kumar, Mr. Alan Davidson, Prof. Sever S. Dragomir, Prof. Constantin Buse, Dr. Don Watson.

Left to right: Ms. Florica Şt. Cîrstea, Mr. George Hanna, Assoc. Prof. Pietro Cerone, Prof. Terry Mills, Prof. S.S. Dragomir, Mr. Raymond Summit.
Left to right: Prof. Sever S. Dragomir, Mr George Hanna, Ms. Florica St. Cîrstea, Ms. Ewa Sztendur, Assoc. Prof. Pietro Cerone, Dr. Neil Diamond, Prof. Feng Qi.


Left to right: Prof. Sever S. Dragomir, Assoc. Prof. Pietro Cerone, Assoc. Prof. Anthony Sofo, Dr. John Roumeliotis
Published Authored Books

**Some Gronwall Type Inequalities and Applications**  
*by S.S. Dragomir*

The main aim of the present monograph is to point out some natural applications of Gronwall inequalities with nonlinear kernels of Lipschitzian type for the study of qualitative aspects such as: **boundedness** and **convergence to zero at infinity** properties for the solutions of nonlinear Volterra integral equations and the **stability** properties of the nonlinear system of differential equations.

**Computational Techniques for the Summation of Series**  
*By Anthony Sofo*

The main aim of this book is to present a unified treatment of summation of sums and series using function theoretic methods. We develop a technique, based on residue theory, that is useful for the summation of series of both non-hypergeometric and hypergeometric type.

This book is intended to complement the books of Koepf and Petkovšek, Wilf and Zeilberger, it gives an extra comprehensive perspective on the many methods and procedures that are available for the summation of series. To the author's knowledge, no book of this type exists which attempts to give a link, by developing a comprehensive method, between non-hypergeometric and hypergeometric summation. The book has intentionally not been written as an algorithmic approach to summation, no doubt this will be done by other authors. In particular the book develops computational techniques for the summation of series.

The present book is intended for use in the fields of applied mathematics, analysis, non-hypergeometric and hypergeometric summation, summation of series and automated techniques.

Published Edited Books

**Ostrowski Type Inequalities and Applications in Numerical Integration**  
*Edited by Sever S. Dragomir and Th. M. Rassias*

Integral inequalities involving functions with bounded derivatives, otherwise known as Ostrowski-type integral inequalities, have enjoyed a surge in popularity. This field has developed significantly over the last few years, and has yielded many new results and powerful applications in numerical integration, probability theory and stochastics, statistics, information theory, and integral operator theory.

The main aim of the present work is to present a number of selected results on Ostrowski-type integral inequalities. Results for univariate and multivariate real functions and their natural applications in the error analysis of numerical quadratures for both simple and multiple integrals as well as for the Riemann–Stieltjes integral are
given. Topics dealt with include generalisations of the Ostrowski inequality and its
applications; integral inequalities for n-times differentiable mappings; three-point
quadrature rules; product-branched Peano kernels and numerical integration;
Ostrowski-type inequalities for multiple integrals; results for double integrals based
on an Ostrowski-type inequality; product inequalities and weighted quadrature; and
some inequalities for the Riemann–Stieltjes integral.

This book is intended for researchers and graduate students working in the fields of
integral inequalities, approximation theory, applied mathematics, probability theory
and stochastics, and numerical analysis.

Inequality Theory And Applications 1 – 2002
Edited by Y.J. Cho, J.K. Kim and S.S. Dragomir

Inequality Theory And Applications 2 – 2003
Edited by Y.J. Cho, J.K. Kim and S.S. Dragomir

Inequality Theory And Applications 3 – 2003
Edited by Y.J. Cho, J.K. Kim and S.S. Dragomir

This series of three books aims to introduce and exchange recent new topics in
Inequality Theory and application. They are a compilation of some invited papers by
leading scholars in their fields as special contributors, as well as peer-refereed papers
of talks which were given at the Sixth and Seventh International Conferences on
Nonlinear Functional Analysis and Applications, held at Gyeongsang National
University and Kyungnam University, Korea, in 2000 and 2001 respectively.

Publications in Refereed Journals and Books

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remainder in Taylor's formula, Journal of Mathematical Analysis and
Applications, 263 (2001), 246-263.

inequalities for the dispersion of a random variable whose PDF is defined
on a finite interval, Journal of Inequalities in Pure and Applied

survey on Ostrowski type inequalities for twice differentiable mappings
and applications, in Inequality Theory and Applications - Volume 1, Y.J.


2002


2003


S.S. Dragomir and A. Sofo, An integral inequality related to the Ostrowski result and applications, in *Inequalities Theory and Applications*, 57


