

2015

Preface special volume on the Conference on Graph Theory, Matrix Theory and Interactions

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Recommended Citation

Cioaba, Sebastian M.; Murty, Ram; Shader, Bryan L.; Tardif, Claude; Vander Meulen, Kevin N.; and Wehlau, David. (2015), "Preface special volume on the Conference on Graph Theory, Matrix Theory and Interactions", *Electronic Journal of Linear Algebra*, Volume 28. DOI: <https://doi.org/10.13001/1081-3810.2985>

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Preface special volume on the Conference on Graph Theory, Matrix Theory and Interactions

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**PREFACE TO THE SPECIAL VOLUME OF THE ELECTRONIC
JOURNAL OF LINEAR ALGEBRA
ON THE OCCASION OF
CONFERENCE ON GRAPH THEORY, MATRIX THEORY AND
INTERACTIONS
A CONFERENCE TO CELEBRATE THE SCHOLARSHIP OF DAVID
GREGORY
QUEEN'S UNIVERSITY, CANADA, JUNE 20-21, 2014.***

SPECIAL EDITORS: SEBASTIAN M. CIOABĂ, M. RAM MURTY, BRYAN SHADER,
CLAUDE TARDIF, KEVIN VANDER MEULEN AND DAVID WEHLAU



The Conference on Graph Theory, Matrix Theory and Interactions was held at the Department of Mathematics of the Queen's University, Canada, on June 20-21, 2014. The conference was a celebration of the scholarship of the late David A. Gregory, a

*Received by the editors on February 6, 2015. Accepted for publication on March 15, 2015.

long-serving professor in the Department of Mathematics at Queen's University. The conference topics reflect the David's mathematical interests and contributions. The organizing committee consisted of Sebastian M. Cioabă (University of Delaware), M. Ram Murty (Queen's University), Bryan Shader (University of Wyoming), Claude Tardif (The Royal Military College of Canada), Kevin Vander Meulen (Redeemer University College), and David Wehlau (The Royal Military College of Canada).

David Gregory explored mathematical problems that bridged two areas of mathematics: linear algebra and discrete mathematics, especially graph theory. His insights, careful approach and writing influenced many mathematicians, especially in combinatorial matrix theory.

This volume includes a survey of David Gregory's research. David's research was initially focused upon vector sequence spaces, but moved into topics related to ranks, exploring Boolean rank, nonnegative rank, and even introducing a new concept, Hermitian rank. He explored algebraic connections with some graph theoretic counting problems such as finding bounds on clique cover numbers and biclique partition numbers of graphs. David was fond of working on problems at the intersection of different areas of mathematics. For example, he used combinatorial tools to investigate problems in algebraic geometry involving monomial ideals and points in projective spaces. David studied variations on the Graham-Pollak theorem, a purely combinatorial problem whose only known solutions use clever algebraic means. Following along these lines, David was keenly interested in eigenvalues of graphs and tournaments, exploring connections to inertia of graphs, spread of the eigenvalues of a graph, and most recently, relationships between eigenvalues and the matching number or the independence number of a graph.

The conference included presentations by both researchers who have collaborated with David (of which there are many), as well as other researchers who have been influenced by his work. A banquet was held at the University Club on June 20th, and many fond stories of David were shared.

Shaun Fallat gave the inaugural ILAS Hans Schneider Lecture and discussed interesting work on the principal rank characteristic sequence. Other Invited talks were given by Richard A Brualdi, Sebastian M. Cioabă, Edwin van Dam, Randall J. Elzinga, Robert Erdahl, Shaun Fallat, Chris Godsil, Willem Haemers, Steve Kirkland, Kevin N. Vander Meulen, Eric Moorhouse, M. Ram Murty, Naomi Shaked-Monderer, Claude Tardif, and David Wehlau. Contributed talks were presented by Aida Abiad, Marina Arav, Alpesh M. Dhorajia, Brydon Eastman, A. Farrag, Jan Foniok, Hein van der Holst, Oksana Pichugina, Steven Rayan, David Roberson, and Michael Tait.

The meeting was endorsed and supported by the International Linear Algebra Society ILAS. It was also sponsored by the Fields Institute and the Department

Scholarship of David Gregory

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of Mathematics, Queen's University, Ontario, Canada.

This special volume of The Electronic Journal of Linear Algebra is devoted papers related to the themes of the conference. Each paper went through the usual procedure of refereeing, according to the high standards of ELA.



Photo of conference participants