

# W-CLAM Final Report: BIRS workshop 10w2137

May 31, 2010

The BIRS workshop 10w2137 was devoted to a “Western Canada Linear Algebra Meeting” (W-CLAM). It was the tenth biennial event with this title and is organized by researchers in western Canadian universities (ably assisted by colleagues from Washington State University, Pullman).

Linear algebra is a thriving and broadly based discipline that draws from, and informs, several branches of mathematics, including analysis, algebra, and combinatorics. Further, because of linear algebra’s ubiquity and utility, the discipline enjoys a continuing dialogue with numerous areas of application. Two of the broad goals of the W-CLAM series are to a) present a biennial snapshot of the area, and b) bring together a mix of well-established and early-career researchers in an informal setting. The recent BIRS workshop 10w2137 succeeded in both respects.

The meeting included three outstanding invited speakers:

S. Friedland, University of Illinois,  
I. Ipsen, University of North Carolina,  
F. Tisseur, University of Manchester.

In addition, we maintained our tradition of including early career researchers (in postgraduate and post-doctoral years) with ten such participants of the total of thirty-seven. These researchers participated actively in the meeting with two graduate students (Bodine and Cavers) and two PDF’s (Catral and Deaett) giving lectures and one PDF (Catral) making a poster presentation. One time-slot was set aside for poster presentations which, together with the lectures, promoted lively discussion.

The topics of 16 lecture- and 4 poster- presentations fall into five broad classifications as follows: Contributors and areas of immediate application are noted.

**Numerical linear algebra - design of algorithms:**

A. Greenbaum, C-H. Guo, I. Ipsen.

(Nano-technology. Imaging.)

**Positive matrices and their generalizations:**

M. Catral, S. Fallat, L. Hogben, J. McDonald.

(Economic models. Oscillation matrices.)

**Combinatorial matrix analysis:**

M. Cavers, L. Deaett, D. Grundy, K. Vander Meulen

(Chemistry. Economic and ecological models.)

**Matrix analysis and matrix polynomials:**

S.D. Garvey, R. Pereira, U. Prells, F. Tisseur, I. Zaballa, Y. Zinchenko

(Vibrating systems. Optimization.)

**Tensors/multi-arrays:**

S. Friedland.

(Quantum computing.)

FINANCIAL SUPPORT is gratefully acknowledged  
and WAS PROVIDED BY:

The Pacific Institute for the Mathematical Sciences.

The University of Calgary.

Mount Royal University.

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