

University of Lethbridge
Department of Mathematics
and Computer Science

Number Theory & Combinatorics Seminar

Monday — January 28, 2013

Room: E575

Time: 12:00 to 12:50 p.m.

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The asymptotic existence of Hadamard matrices

Abstract: A square ± 1 -matrix with orthogonal rows is called a *Hadamard matrix*. It is conjectured that a Hadamard matrix of order $4n$ exists for each natural number n . A result of Seberry [1976] states that:

For any positive integer p there is a Hadamard matrix of order $2^n p$ for every $n \geq \lceil 2 \log_2(p - 3) \rceil$.

Rob Craigen, while in our department in 1994, improved this result considerably by showing that:

There exists a circulant signed group Hadamard matrix of every even order n , using a suitable signed group. This in turn would imply the existence of Hadamard matrices of order $2^n p$ for every $n \geq 4 \lceil (1/6) \log_2((p - 1)/2) \rceil + 2$.

These and other asymptotic results will be discussed.

EVERYONE IS WELCOME!

Visit the seminar web page at
<http://www.cs.uleth.ca/~nathanng/ntcoseminar/>