Lethbridge Number Theory
and Combinatorics Seminar

Monday — September 22, 2014
Room: B660
Time: 12:00 to 12:50 p.m.

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On Binary and Quadratic Divisor Problem

Abstract: Let \( d(n) = \sum_{d|n} 1 \). This is known as the divisor function. It counts the number of divisors of an integer. Consider the following shifted convolution sum

\[
\sum_{an-m=h} d(n) d(m) f(an, m),
\]

where \( f \) is a smooth function which is supported on \([x, 2x] \times [x, 2x]\) and oscillates mildly. In 1993, Duke, Friedlander, and Iwaniec proved that

\[
\sum_{an-m=h} d(n) d(m) f(an, m) = \text{Main term}(x) + O(x^{0.75}).
\]

Here, we improve (unconditionally) the error term in the above formula to \( O(x^{0.61}) \), and conditionally, under the assumption of the Ramanujan-Petersson conjecture, to \( O(x^{0.5}) \). We will also give some new results on shifted convolution sums of functions coming from Fourier coefficients of modular forms.

EVERYONE IS WELCOME!

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