

Lethbridge Number Theory and Combinatorics Seminar

Monday — September 22, 2014

Room: B660

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

Farzad Aryan

(University of Lethbridge)

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

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

Here, we improve (unconditionally) the error term in the above formula to $\mathbf{O}(x^{0.61})$, and conditionally, under the assumption of the Ramanujan-Petersson conjecture, to $\mathbf{O}(x^{0.5})$. 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/>



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