Lethbridge Number Theory and Combinatorics Seminar

Monday — March 19, 2018
Room: B543
Time: 12:00 to 12:50 p.m.

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On Generalisations of the Titchmarsh divisor problem

Abstract: The study of the asymptotic behaviour of the summatory function of the number of divisors of shifted primes was initiated by Titchmarsh, who showed that under the generalised Riemann hypothesis, one has

$$\sum_{p\leq x}\tau(p-a)=x\prod_{p\nmid a}\left(1+\frac{1}{p(p-1)}\right)\prod_{p\mid a}\left(1-\frac{1}{p}\right)+O\left(\frac{x\log\log x}{\log x}\right),$$

where τ denotes the divisor function. The above formula was first proved unconditionally by Linnik via the dispersion method. Moreover, applying the celebrated Bombieri-Vinogradov theorem, Halberstam and Rodriguez independently gave another proof.

In this talk, we shall study the Titchmarsh divisor problem in arithmetic progressions by considering the sum

$$\sum_{\substack{p\leq x\\ p\equiv b\pmod r}}\tau(p-a).$$

Also, we will try to explain how to obtain an asymptotic formula for the same, uniform in a certain range of the modulus r. If time allows, we will discuss a number field analogue of this problem by considering the above sum over primes satisfying Chebotarev conditions.

(This is joint work with Akshaa Vatwani.)

EVERYONE IS WELCOME!

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

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