

Lethbridge Number Theory and Combinatorics Seminar

Monday — April 11, 2016

Room: C630

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

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The least prime ideal in the Chebotarev Density Theorem

Abstract: In 1944, Linnik famously showed unconditionally that the least prime in an arithmetic progression $a \pmod{q}$ with $(a, q) = 1$ is bounded by q^L for some absolute effective constant $L > 0$, known as “Linnik’s constant.” Many authors have computed explicit admissible values of L with the current world record at $L = 5$ by Xylouris (2011), refining techniques of Heath-Brown (1992).

We consider a broad generalization of this problem in the Chebotarev Density Theorem (CDT), which is concerned with the splitting behaviour of prime ideals in number fields. Namely, what is the least norm of a prime ideal occurring in CDT? Papers of Lagarias-Montgomery-Odlyzko (1979) and Weiss (1983) give different unconditional field-uniform bounds but without any explicit exponents analogous to the subsequent work on Linnik’s constant. I will report on our recent work establishing such explicit estimates along with some applications related to primes represented by binary integral quadratic forms and congruences for Fourier coefficients of cuspidal Hecke eigenforms.

This is joint work with Jesse Thorner.

EVERYONE IS WELCOME!

Visit the seminar web page at

<http://www.cs.uleth.ca/~nathanng/ntcoseminar/>



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