

Lethbridge Number Theory and Combinatorics Seminar

Monday — January 27, 2020

Room: **W561** ← **Note change of room!**

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

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Explicit results about primes in Chebotarev's density theorem

Let L/K be a Galois extension of number fields with Galois group G , and let $C \subset G$ be a conjugacy class. Attached to each unramified prime ideal \mathfrak{p} in \mathcal{O}_K is the Artin symbol $\sigma_{\mathfrak{p}}$, a conjugacy class in G . In 1922 Chebotarev established what is referred to his density theorem (CDT). It asserts that the number $\pi_C(x)$ of such primes with $\sigma_{\mathfrak{p}} = C$ and norm $N_{\mathfrak{p}} \leq x$ is asymptotically $\frac{|C|}{|G|} Li(x)$ as $x \rightarrow \infty$, where $Li(x)$ is the usual logarithmic integral. As such, CDT is a generalisation of both the prime number theorem and Dirichlet's theorem on primes in arithmetic progressions. In light of Linnik's result on the least prime in an arithmetic progression, one may ask for a bound for the least prime ideal whose Artin symbol equals C . In 1977 Lagarias and Odlyzko proved explicit versions of CDT and in 1979 Lagarias, Montgomery and Odlyzko gave bounds for the least prime ideal in the CDT. Since 2012 several unconditional explicit results of these theorems have appeared with contributions by Zaman, Zaman and Thorner, Ahn and Kwon, and Winckler. I will present several recent results we have proven with Das, Ng, and Wong.

EVERYONE IS WELCOME!

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