Math 209 - Number Theory Seminar

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Asymptotic growth of orders in a fixed number field via subrings in $\mathbb{Z}^n$

Abstract:
Let $K$ be a number field of degree $n$ and $\mathcal{O}_K$ be its ring of integers. An order in $\mathcal{O}_K$ is a finite index subring that contains the identity. A major open question in arithmetic statistics asks for the asymptotic growth of orders in $K$. In this talk, we will give the best known lower bound for this asymptotic growth. The main strategy is to relate orders in $\mathcal{O}_K$ to subrings in $\mathbb{Z}^n$ via zeta functions. Along the way, we will give lower bounds for the asymptotic growth of subrings in $\mathbb{Z}^n$ and for the number of index $p^e$ subrings in $\mathbb{Z}^n$. We will also discuss analytic properties of these zeta functions.

Special Note:
Pre-talk 1:30 PM

Host: Kiran Kedlaya

Thursday, June 3, 2021
2:00 PM
Location: See
https://www.math.ucsd.edu/~nts/