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Graduate Mathematics Seminar

The Distribution and Moments for the GCD of Ideals in the Gaussian Integers

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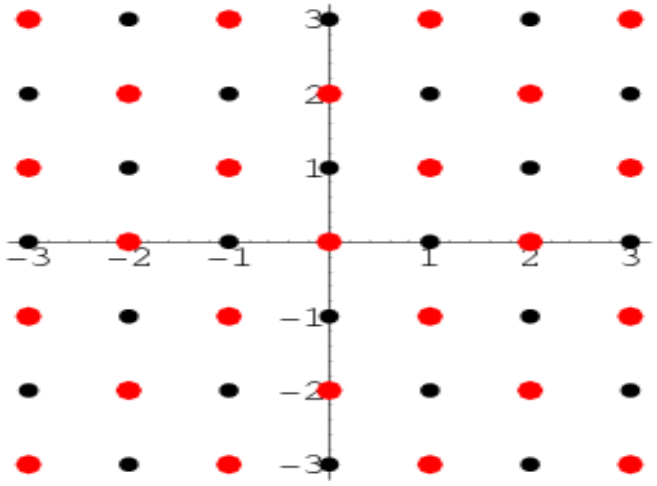

Abstract: In this talk, we first review the probability distribution and its moments to the random variable associated to the greatest common divisor (gcd) of k positive integers. We then give an overview of the ring of Gaussian integers before setting up the probability distribution for greatest common divisor of $X_1^{(n)}, X_2^{(n)}, \dots, X_k^{(n)}$ where $k \geq 2$ and $X_i^{(n)}$ is a nonzero ideal chosen independently and uniformly at random from the set of ideals in $\mathbb{Z}[i]$ with norm at most n for each $1 \leq i \leq k$. Lastly, we use the distribution to compute the moments of the norm of the greatest common divisor of $X_1^{(n)}, X_2^{(n)}, \dots, X_k^{(n)}$.

When: Monday, November 30, 2030, 6:00 – 7:00 pm
Where: CSUCI, Zoom