Séminaire de théorie des nombres

Le 15 septembre 2025 à 14h (PRG)

Applying stratification theorems to counting integral points in thin sets of type II

Exposé de Katharine Woo
(Stanford University)

Résumé : For $n > 1$, consider an absolutely irreducible polynomial $F(Y, X_1, ..., X_n)$ that is a polynomial in Y^m and monic in Y. Let $N(F, B)$ be the number of integral vectors x of height at most B such that there is an integral solution to $F(Y, x) = 0$. For $m > 1$ unconditionally, and $m = 1$ under GRH, we show that $N(F, B) \ll_\epsilon log(||F||)^c B^{n-1+1/(n+1)+\epsilon}$ under a non-degeneracy condition that encapsulates that $F(Y, X_1, ..., X_n)$ is truly a polynomial in $n + 1$ variables. A strength of this result is that it requires no smoothness assumptions for $F(Y, X_1, ..., X_n)$ nor constraints on the degrees of F in $X_1, ..., X_n$. A key ingredient in this work is a formulation of the Katz-Laumon stratification theorems for exponential sums that is uniform in families. This talk is based on joint work with Dante Bonolis, Emmanuel Kowalski, and Lillian B. Pierce.