SPEAKER:

Blair Davey, City College of New York

TITLE:

Recent progress on Landis' conjecture

ABSTRACT:

In the late 1960s, E. M. Landis made the following conjecture: If u and V are bounded functions, and u is a solution to $\Delta u = Vu$ in $\mathbb{R}^n$ that decays like $|u(x)| \leq c \exp(-C|x|^{1+})$, then u must be identically zero. In 1992, V. Z. Meshkov disproved this conjecture by constructing bounded functions $u, V : \mathbb{R}^2 \to \mathbb{C}$ that solve $\Delta u = Vu$ in $\mathbb{R}^2$ and satisfy $|u(x)| \leq c \exp(-C|x|^{4/3})$. The result of Meshkov was accompanied by qualitative unique continuation estimates for solutions in $\mathbb{R}^n$. In 2005, J. Bourgain and C. Kenig quantified Meshkov's unique continuation estimates. These results, and the generalizations that followed, have led to a fairly complete understanding of the complex-valued setting. However, there are reasons to believe that Landis' conjecture may be true in the real-valued setting. We will discuss recent progress towards resolving the real-valued version of Landis' conjecture in the plane.