

MTCS COLLOQUIUM

Khang Tran

will present

Refinements in the Negative Solution of Hilbert's Tenth Problem

3:30 pm
Tuesday, November 2nd
Violette Hall 1236

In 1900 D. Hilbert delivered a famous lecture at the International Congress of Mathematicians in Paris. He identified 23 important unsolved problems in mathematics. The tenth problem in his list asks for devising a process with a finite number of operations to determine whether a given Diophantine equation is solvable in rational integers. With the culmination of the work of several mathematicians, a negative solution to this problem was completed by Y. Matiyasevich in 1973. The solution hinges on the equivalence between recursive enumerable sets and Diophantine sets, an equivalence which had been previously demonstrated in 1961 by M. Davis, H. Putnam, and J. Robinson. Matiyasevich provided the last link in the chain by proving the equivalence between exponential Diophantine sets and Diophantine sets. His remarkable proof used properties of the Fibonacci numbers. Matiyasevich later made several improvements in the proof by taking different approaches to exponential functions (e.g., via Pell equations). Some refinements can still be made to this beautiful proof.

Cookies and Refreshments!!!