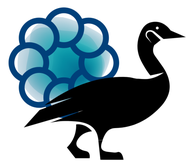
Hilbert's Tenth Problem

Robin Visser

Week 4 - Term 1

WARWICK MATHEMATICS



POSTGRADUATE SEMINAR

Abstract

Can you find four distinct positive integers w, x, y, z such that $w^3 + x^3 = y^3 + z^3$? If that's too easy, try finding a non-trivial integer solution to $x^4 + y^4 + z^4 = w^4$. And good luck finding any integral solution to $x^3 + y^3 + z^3 = 114$. This all begs the question of whether we can construct a general algorithm to determine whether any given Diophantine equation has integer solutions. David Hilbert posed this exact question at the second ICM in 1900, where a negative answer was finally proven 70 years later by Yuri Matiyasevich building on work by Martin Davis, Hilary Putnam and Julia Robinson. In this talk, we'll explore the mathematical ideas behind Hilbert's tenth problem as well as go over many surprising applications, extensions to other number fields, and how this relates to several other famous open problems!

Time

12 pm, 26^{th} October 2022

Location

Room B3.02

Organisers

Alvaro Gonzalez Hernandez
Katerina Santicola