Café Scientifique Headingley

Monday 9th June 2025

Tame and wild:

The universe of mathematics as viewed from logic

By: Dugald Macpherson

Dog by Joliot, - Leopard by Bernard Dupont France

Outline: At primary school we learn to add and multiply the `natural numbers' 0,1,2,… . At later stages we meet the integers (possibly including negatives), the rationals (fractions), the reals (decimals), and the complex numbers (including a square root of -1). One might expect that these objects become harder and harder, but from the viewpoint of model theory in mathematical logic, the oppositive is the case – the natural numbers are definitely `wild' and the complex numbers `tame'. For example, the solution of Hilbert's Tenth Problem says that there is no algorithm which decides, for any polynomial with integer coefficients, whether it has an integer solution. At the other extreme, there is an algorithm which decides, for every `sentence' of logic, whether it is true of the complex numbers, and far stronger tameness properties hold. I will discuss these logical notions of `tame' and `wild' mathematical structure, and how, on the tame side, an abstract viewpoint from logic can have strong mathematical applications.

Dugald Macpherson is a professor of mathematics at the University of Leeds, working in model theory (mathematical logic) and its connections to algebra and combinatorics. He completed his doctorate at Oxford in 1983, and after a series of postdocs and a position at Queen Mary, moved to Leeds in 1994.

Venue: The New Headingley Club, 56 St Michaels Road, LS6 3BG
Time: Room opens 7:30pm, Talk begins promptly at 7:45pm
Entry: Donation please for room hire and expenses: £4 at the door

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