

Formalizing Mathematics in Lean

María Inés DE FRUTOS FERNÁNDEZ
Imperial College London

Facultad de Informática

On line - <https://meet.google.com/egh-rzih-jdd> - martes 8 de noviembre de 2022 - 17:00

Entrada libre hasta completar el aforo

Resumen:

Formal verification has been used by computer scientists for decades to prevent software bugs. However, with a few exceptions, it has not been used by researchers working in most areas of mathematics (geometry, algebra, analysis, etc.). In this talk, we will discuss how this has changed in the past few years, and the possible implications to the future of mathematical research, teaching and communication. We will focus on the theorem prover Lean and its mathematical library mathlib, since this is currently the system most widely used by mathematicians. Lean is a functional programming language and interactive theorem prover based on dependent type theory, with proof irrelevance and non-cumulative universes. The mathlib library, open-source and designed as a basis for research level mathematics, is one of the largest collections of formalized mathematics. It allows classical reasoning, uses large- and small-scale automation, and is characterized by its decentralized nature with over 200 contributors, including both computer scientists and mathematicians.

Sobre María Inés DE FRUTOS FERNÁNDEZ:

María Inés de Frutos Fernández is a Research Associate in Formal Mathematics at Imperial College London. She earned her PhD in Mathematics from Boston University on 2020, under the supervision of Prof. Jared Weinstein. She also holds a Master's Degree in Mathematics from said university. Previously she graduated from Universidad Autónoma de Madrid with a Dual Bachelor's Degree in Mathematics and Computer Science. Her current research interests include formal mathematics, number theory and arithmetic geometry.