

Formal Verification in Mathematics

Undergraduate Math Club
CORNELL UNIVERSITY



SPEAKER

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ABSTRACT

A formal proof is a proof in which every logical inference has been checked all the way back to the fundamental axioms of mathematics. Although there is a long way to go for formalization to be practical for working mathematicians, existing theories and technologies of formal verification are already capable of formalizing a large body of modern mathematics. In this talk, I will introduce the building blocks of formal verification, including logical foundations, proof assistants, and expressing mathematics formally in such systems. In particular, I will illustrate the relevant concepts by giving a brief overview of type theories, the Coq proof assistant, and the Flyspeck project that formally verified the 400 years old Kepler's Conjecture on sphere packing. Furthermore, I will discuss common challenges in formalization endeavors.

DEC 3 at 5:15pm
Malott 532 ★ Refreshments