Colloquium

October 10, 4:05 p.m. (9th Period)
(in the Atrium)

Speaker: Dalton Worsnup

Title: Homotopy Type Theory

Abstract

This talk is meant to be a friendly introduction to Homotopy Type Theory for the non-logician. Homotopy type theory is a recent development in the foundation of mathematics inspired by a striking connection between homotopy theory and type theory. A type $A$ is interpreted as a space, a path between points $a : A$ and $b : A$ is interpreted as a witness that $a$ equals $b$ in $A$, and under the proposition-as-types scheme, this path is encoded as a point $p$ inhabiting the type $a =_A b$. This leads to a natural formalization in homotopy type theory of all known mathematical endeavors from propositional logic to higher category theory into what are called homotopy $n$-types. Finally, through the introduction of higher inductive types and the Univalence Axiom, homotopy type theory has lead to novel new proofs of known results.