

**Speaker:** James Walsh

**Title:** Hierarchies of proof-theoretic strength

**Abstract:** It is well-known that natural axiomatic theories are well-ordered by proof-theoretic strength, for various popular metrics of proof-theoretic strength. However, without a precise mathematical definition of "natural," it is unclear how to prove this, or even how to state it. We will discuss two approaches to explaining this phenomenon, both of which emphasize the role of iterated reflection principles. The first approach is from joint work with Antonio Montalbán; the second approach is from joint work with Fedor Pakhomov.