1086-03-135 **Itay Neeman*** (`ineeman@math.ucla.edu`), University of California, Los Angeles, Department of Mathematics, Los Angeles, CA 90095-1555. *Three-type side conditions and forcing axioms.*

he *proper forcing axiom* (PFA) has for several decades served as an axiomatic center point for consistency proofs. The associated class of *proper* posets is among the most studied and most useful in the theory of forcing. The posets preserve the first uncountable cardinal $\aleph_1$, and the axiom states that for every proper poset, and every collection of $\aleph_1$ maximal antichains in the poset, there is a filter meeting all antichains in the collection.

In this talk we discuss higher analogues of the axiom, that allow meeting collections of $\aleph_2$ maximal antichains, in specific classes of posets that preserve both $\aleph_1$ and $\aleph_2$.

These analogues rely on particular posets that use finite sequences of models of three types to ensure preservation of cardinals. Posets of this kind but with models of only one type (namely countable) have a long history of use in ensuring properness. Generalizations to incorporate models of more types led to a finite support proof of the consistency of PFA, and to the current work on higher analogues. (Received September 21, 2012)