



Minisymposium 16 - Set Theory

The consistency strength of a five element basis for uncountable linear orderings

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Moore showed in 2004 that the Proper Forcing Axiom implies that there is a five element basis for the class of uncountable linear orders, thus confirming a well known conjecture of Shelah. The assumptions needed in the original proof have consistency strength of at least infinitely many Woodin cardinals. In this talk we will show that the upper bound on the consistency strength of the existence of such a basis is less than a Mahlo cardinal, a hypothesis which can hold in the constructible universe. The key notion in our proof is the saturation of an Aronszajn tree, a concept which was studied by Baumgartner in the 1970s. In particular, we show that the saturation of an Aronszajn tree together with the Bounded Proper Forcing Axiom suffices for the existence of a five element linear basis.

This is joint work with B. Koenig, P. Larson and J. Moore.