

The Oliver Club

www.math.cornell.edu/~oliver/

A Five Element Basis for the Uncountable Linear Orders

It is a classical fact that every infinite linear order contains an isomorphic copy of either the positive or negative integers. Another way of phrasing this statement is to say that the infinite linear orders have a two element basis. In the early 1970s, Saharon Shelah considered the existence of an analogous basis for the uncountable linear orders. He made a conjecture to the effect that the existence of a five element basis for the uncountable linear orders is consistent with the usual axioms of mathematics.

Recently I verified Shelah's conjecture: The Proper Forcing Axiom implies that if X is a set of reals of cardinality ω_1 and C is a Countryman line, then X , ω_1 , $-\omega_1$, C , and $-C$ are a basis for the uncountable linear orders. After explaining the meaning of the undefined terms in this theorem, I will present some of the historical development of this problem and show it fits into the larger picture of modern set-theoretic research.



Justin Moore

Cornell University

Refreshments will be served at 3:55 PM in the Mathematics Department lounge (532 Malott Hall).

Thursday, October 18, 2007
at 4:25 PM in 406 Malott Hall