1086-03-134 **Justin Moore*** (justin@math.cornell.edu), Cornell University, Department of Mathematics, Ithaca, NY 14853-4201. *Nonassociative Ramsey Theory and the amenability of Thompson's group.*

In 1973, Richard Thompson considered the question of whether his newly defined group F was amenable. The motivation for this problem stemed from his observation — later rediscovered by Brin and Squire — that F did not contain a free group on two generators, thus making it a candidate for a counterexample to the von Neumann-Day problem. While the von Neumann-Day problem was solved by Ol′šanskiĭ in the class of finitely generated groups and Ol′šanskiĭ and Sapir in the class of finitely presented groups, the question of F's amenability was sufficiently basic so as to become of interest in its own right.

In this talk, I will discuss my recent solution to this problem. The proof is obtained by exhibiting the existence of an idempotent measure on the free nonassociative groupoid on one generator. Such measures are necessarily invariant if this groupoid is identified in the standard way with the set of positive elements of F. The existence of the idempotent also has Ramsey-theoretic implications: it facilitates the proof of a generalization of Hindman's Theorem to the setting of nonassociative groupoids. (Received September 18, 2012)