

ALGEBRA SEMINAR

Almost locally free groups and a theorem of Magnus

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ABSTRACT: Ben Fine observed that a theorem of Magnus on normal closures of elements in free groups is first order expressible and thus holds in every elementarily free group. This classical theorem, vintage 1931, asserts that if two elements in a free group have the same normal closure, then either they are conjugate or one is conjugate to the inverse of the other in the free group. An examination of a set of sentences capturing this theorem reveals that the sentences are universal-existential. Consequently the theorem holds in the almost locally free groups of Gaglione and Spellman. We give a sufficient condition for the theorem to hold in every fully residually free group as well as a sufficient condition for the theorem to hold, even more generally, in every residually free group. This is joint with Dennis Spellman and Seymour Lipschutz.

Monday, April 6, 2009, 1:40 – 2:30 pm, Wachman 617