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Robert D Gray and **Benjamin Steinberg*** (bsteinberg@ccny.cuny.edu). *Report on homological finiteness conditions for one-relator monoids.* Preliminary report.

The word problem for one-relator monoids is a longstanding open question. Kobayashi asked in 2000 whether every one-relator monoid admits a finite complete rewriting system. A necessary condition to have a finite complete rewriting system is to satisfy the homological finiteness condition FP_∞ . Kobayashi also asked in 2000 whether every one-relator monoid is of type FP_∞ and proved that each one-relator monoid is of type FP_3 .

In this talk, we report on our progress toward proving that every one-relator monoid is indeed of type FP_∞ . Our techniques combine methods from algebraic topology (monoids acting on CW complexes), homological algebra and the theory of monoid van Kampen diagrams. (Received September 13, 2019)