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Paul E. Schupp* (schupp@math.uiuc.edu), 310 Eliot Drive, Urbana, IL 61801. *Reflections on Rigidity and Random Groups.*

The following two remarkable statements are theorems about random one-relator quotients of free groups and random m -relator quotients of the modular group for an arbitrary positive integer m . (Work of Kapovich, Schupp and Shpilrain.) The statements are also no doubt true for m -relator quotients of the free group but there is a technical difficulty. The first statement is that random groups have a very strong Mostow-type rigidity: Two random groups are isomorphic if and only if there is a labelled graph isomorphism between their Cayley graphs (with respect to the given random presentations). The basic idea of Kolmogorov complexity is that a long random word is its own shortest description. Surprisingly, one can prove that a random group presentation is indeed incompressible: The random presentation is, up to only linear compression, as small as possible over all finite presentations of the given group. We will also speculate on whether or not random groups should have certain other properties. (Received February 23, 2010)