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*Fundamental groups of 3-manifolds and finite state automata.*

The word problem is solvable for all fundamental groups of compact 3-manifolds; that is, for each 3-manifold group there is an algorithm which, upon input of a word in the generators, determines whether the word represents the identity. In the case that the 3-manifold has no Nil or Sol prime factors, the word problem is solvable in quadratic time. In this talk I will discuss solutions the word problem for 3-manifold groups using finite state automata (computers with a finite amount of memory), and methods to build these algorithms. Based on joint projects with M. Brittenham and T. Susse, and with D. Holt, S. Rees, and T. Susse. (Received March 01, 2020)