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**Stephen J. Bigelow\*** ([bigelow@unimelb.edu.au](mailto:bigelow@unimelb.edu.au)), 9 Susan St., Eltham, Victoria 3095, Australia. *Representations of Braid Groups.*

Artin's braid groups are a famous way to put a group structure on pieces of string dangling in three-dimensional space. Representations of these groups into groups of matrices have been studied since the discovery of one such representation by Burau in 1935. The Jones polynomial of a knot is perhaps the most famous fruit born of these studies.

A representation is said to be faithful if it is one-to one. I will discuss two results from my doctoral thesis on the faithfulness question for representations of braid groups. The first is that the Burau representation is not faithful for the braid group on five strands. The method is similar to that used by Long and Paton for the case of six strands. The second result is that the Lawrence-Krammer representation is faithful for all braid groups. This proves that braid groups are linear. Both results define representations using homology, and analyse them using combinatorics of embedded curves on a disk. (Received October 25, 2000)