An Implementation of the Neumann–Praeger Algorithm for the Recognition of Special Linear Groups

Derek F. Holt
Sarah Rees

Abstract

We report on our implementation of an algorithm due to Neumann and Praeger for deciding whether or not a matrix group over a finite field contains the special linear group. This is a Monte Carlo algorithm, and thus has a small but precise probability of returning the wrong answer; this probability can be specified in advance by the user. The algorithm requires the selection of random elements from the group, and the most important problem that arose in the implementation was to find a satisfactory procedure for making this selection.