Matrix generators for the Harada–Norton group

Alexander J. E. Ryba
Robert A. Wilson

Abstract

We show how to construct 133×133 matrices over GF(5) generating the Harada–Norton group. We also obtain generators for its automorphism group. For many purposes this permits much faster calculations in the group than the alternative of permutations on 1,140,000 points. More importantly, it reduces storage requirements by a factor of around 500.