1046-05-1610 **Garry S Bowlin*** (bowlin@math.binghamton.edu), Binghamton University, Dept. of Mathematics, Bingahmton, NY 13902-6000. *The Gale-Berlekamp Switching Game.* Preliminary report.

The Gale-Berlekamp Switching Game consists of an $n \times n$ grid of lights, with switches for each row and column, and a subset S of lights which are initially on. When a switch is thrown, all lights in the corresponding row or column change states. The goal of the game is to turn off as many lights as possible. The question is: at the end of the game, what is the maximum number of lights that are still on, over all possible starting sets S? My research focuses on this question and the generalization to an $m \times n$ grid. I study the problem by looking at the adjacency matrix of a signed complete bipartite graph that corresponds to the initial configuration, and asking what are the possible final configurations. This results in a polytope of final configurations, and using integer programming, the maximum number of lights can be found. (Received September 16, 2008)