

**Meeting:** 1003, Atlanta, Georgia, MAA CP X1, MAA General Contributed Paper Session, I

1003-X1-476      **Kurt E Ludwick\*** ([keludwick@salisbury.edu](mailto:keludwick@salisbury.edu)), Department of Mathematics & Computer Science, Salisbury University, Salisbury, MD 21801. *Inductive Reasoning Activities With PascGalois*. Preliminary report.

This paper discusses two PascGalois activities designed to promote inductive reasoning. PascGalois is a software application that displays cellular automata over  $Z_n$  by assigning a distinct color to each element of  $Z_n$ . For example, Pascal's Triangle is rendered by assigning each cell of the triangle a color based on its remainder modulo  $n$ ; thus, Pascal's Triangle may be regarded as a one-dimensional cellular automaton over  $Z_n$ . For the first of these activities, students analyzed Pascal's Triangle color-coded according to various moduli. Of particular interest was the occurrence of "monochromatic triangles" which occur in various patterns under such a coloring of Pascal's Triangle. For the second activity, students observed the behavior of two-dimensional automata over  $Z_n$  on square grids. Students observed the cycle length of the automaton for various grid sizes and values of  $n$ , with the objective of finding connections among grid size, modulus and cycle length. (Received September 15, 2004)