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Ethan Kowalenko* (ekowalen@msudenver.edu). *Extending the Euclidean Dimension of Spinpossible*. Preliminary report.

Spinpossible is a game played on a 3×3 board, where the natural numbers up through 9 are bijectively mapped with the possibility of inverted orientation. Given any starting board, the goal of the game is to spin rectangles on the board by 180° in order to arrive at the identity board, and to do it in a minimum number of spins. The set of all possible boards can be represented by the Coxeter group B_9 under a non-standard generating set, i.e., the spins. So far, we have analyzed Spinpossible in the hopes of optimizing solutions to random boards, using methods from graph theory, group theory, and metric spaces.

This game easily generalizes to any $m \times n$ board, $m \leq n$. Noting this, we call a board one-dimensional if $m = 1$, and two dimensional otherwise. In this talk, we will show a combinatorial solution to the 2×2 boards, as well as the solution from Hannenhali and Pevznor for one-dimensional boards. We will then discuss how we can extend the definitions of Spinpossible to d -dimensions, and determine what lower dimensional machinery is affected by this extension. (Received September 15, 2014)