1106-VN-1875 **James M Hammer*** (jmh0036@auburn.edu), 426 North Donahue Dr, Apt 6, Auburn, AL 36832.
Taking Sudoku a Step Further.

Sudoku has risen in popularity over the past few years. The rules are simple, yet the solutions are often less than trivial. Mathematically, these puzzles are interesting in their own right. This presentation will use the idea of a Sudoku Puzzle to define a new kind of $n \times n$ array. Further, we will aim to prove some necessary (and on occasion sufficient) conditions for the existence of these arrays. To that end, we define a latin square of order n as an $n \times n$ array where every row and every column contain every symbol $1, 2, \ldots, n$ exactly once. We say $a \times b$ is an ordered factor pair of the integer n if $n = a \times b$. An (a, b)-Sudoku latin square is a latin square where in addition to each row and column containing every symbol exactly once, each $a \times b$ rectangle also contains every symbol exactly once when the $n \times n$ array is tiled with $a \times b$ rectangles in the natural way. A factor pair latin square of order n (denoted FPLS(n)) is an (a, b)-Sudoku latin square for every factor pair (a, b) of n. This presentation will mainly be concerned with the existence of such designs as well as related problems to such designs. (Received September 15, 2014)