1116-Q1-1197 **Whitney George*** (`wgeorge@uwlax.edu`) and **Janine Janoski**. *The Hidden Mathematics of Super Tic-Tac-Toe.*

We all have played the beloved game tic-tac-toe. Now imagine in each square of the board, we draw a smaller tic-tac-toe board, making a 9×9 grid with 9 squares making a larger board. Now let Super Tic-Tac-Toe (STTT) be a game where each player's move dictates which larger square a player must make their next move. We will also play an impartial game of STTT where each player uses an "x".

In this talk we will explore the mathematical structure of impartial STTT. We define a set of actions on a game board which gives rise to a group-action on the game that creates equivalent games. We will discuss how the structure of this group-action forms a Dihedral group and how this can be extended to $n \times n$ super tic-tac-toe boards. (Received September 17, 2015)