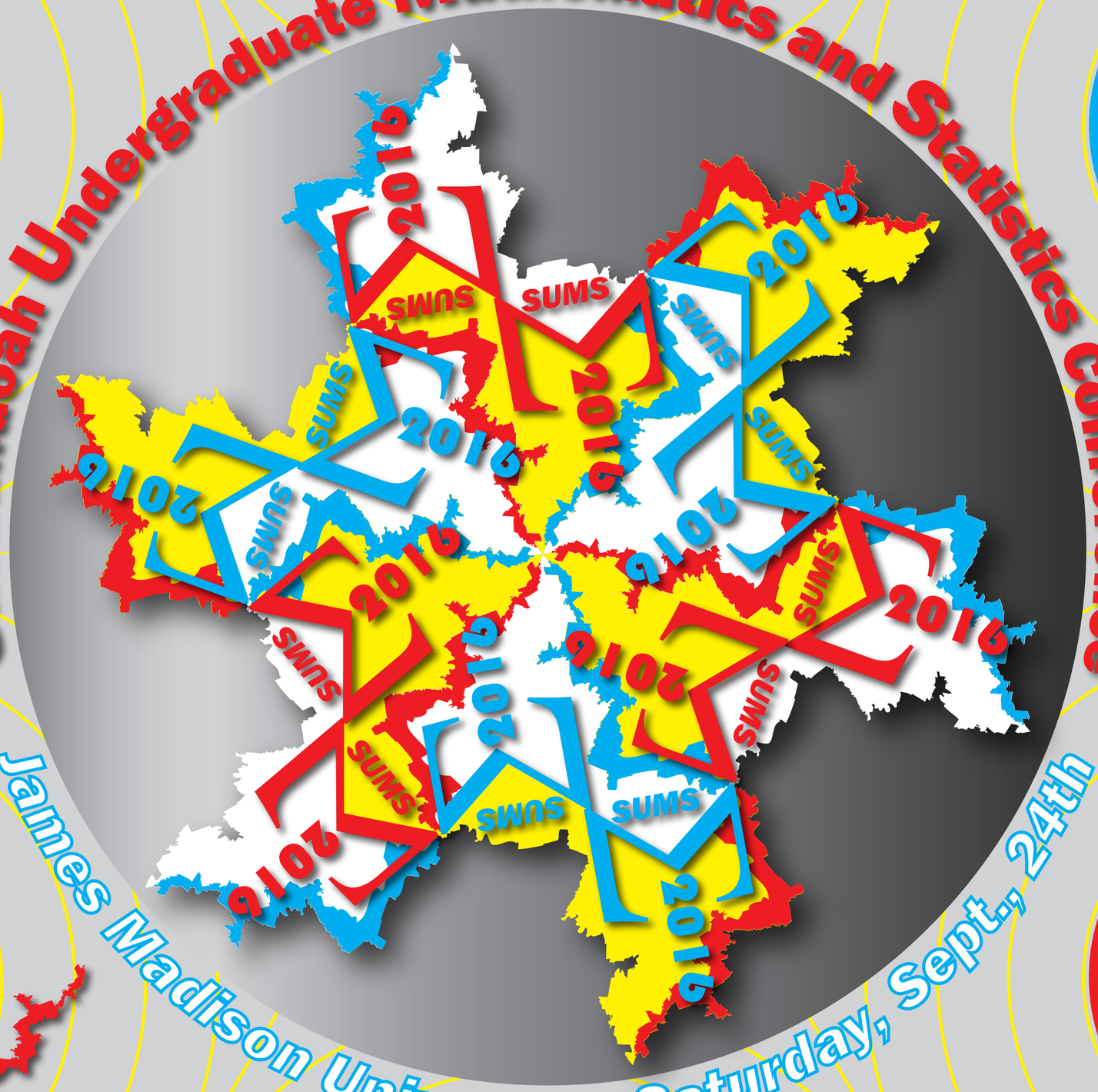
Shenandoah Undergraduate Mathematics and Statistics Conference



James Madison University Saturday, Sept., 24th

Congressional District 12
North Carolina

Tommy Ratliff

WHY CAN'T THE PROCESS BE FAIR? From Presidential Elections to Picking a Movie

Abstract: It seems as if every four years in the United States the public realizes that there are serious flaws in the Presidential election process. 2016 is certainly no exception. Voters of all political stripes are keenly aware that if we had used a different process then we might have different choices in the election this November. And they are right! Different election methods can select different winners even if no voters have changed their preferences.

However, many people do not realize that these same issues arise in our daily lives whenever a group of people get together to make a decision, from the math department selecting which calculus text to use, to a group of friends deciding what movie to watch. We will see that there is a rich geometric structure underlying decision procedures that can aid in systematically analyzing their properties. This structure can help explain why different voting methods give different outcomes and why our intuition on fairness may lead us astray.

Chaim Goodman-Strauss

CAN'T DECIDE? UNDECIDED!

Abstract: One of the hallmark achievements of the last century was the recognitionthat, incredibly, mathematics itself can establish limits on mathematical knowledge: We can *prove* there are true but formally unprovable mathematical statements. Far from an abstract, distant principle, 'undecidability' is intimately bound into every branch of mathematics --in some sense, the generic mathematical statement is not provably true or false: Even in recreational mathematics, examples abound!

For More Information:
www.jmu.edu/mathstat/sums