

1158-20-285

**Cyane Gonzalez\***, Department of Mathematics, 5245 North Backer Avenue M/S PB 108, California State University, Fresno, Fresno, CA 93740, and **Laura Marroquin, Maria S. Nogin** and **Taylor W. Yates**. *Twists and Turns: Learning Permutations through Rubik's Cubes*.

Did you know that a Rubik's cube and group theory have a lot in common? A Rubik's cube and its variations are interesting little toys that hide a complex world of cycles and permutations. In this talk we will share the secrets of Rubik's cubes and what it takes to solve them. Our Math Circle participants love sharing their algorithms for solving the cubes, including those that are not cubes at all, and creating various patterns. They ask questions, such as is it possible to just switch two corner pieces? What other configurations can or cannot be achieved? With a basic introduction to permutations, we can answer a lot of their questions. What a great incentive to learn about the parity of a permutation, cycles, inverses, commutators, and much more! (Received March 03, 2020)