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Geometric properties of involutions in classical groups.

The equivalence of a finite group acting flag-transitively on abstract regular polytopes and the group being generated by certain sequences of involutions is well known. It is a connection that opens the possibility of constructing new polytopes by purely group-theoretic means. In this talk I will recall some geometric properties of involutions in classical groups and propose that these properties can often be exploited to decide whether such groups arise as automorphism groups of abstract regular polytopes. (Received February 14, 2018)