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Thomas Langley* (langley@rose-hulman.edu). *Generalizations of commutativity in finite groups*. Preliminary report.

The probability that two randomly selected elements of a non-Abelian finite group commute is at most $5/8$, and this bound is tight when the center of the group is as large as possible. We investigate several generalizations of commutativity that lead to variations of the $5/8$ bound, in particular the probability that a product of n group elements is equal to its reverse, to a cyclic rearrangement of itself, or to an arbitrary permutation or signed permutation of itself. We also study how these generalized bounds behave when the center of a group is small instead of large. (Received September 16, 2014)