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Teerapong Suksumran* (teerapong.suksumran@gmail.com), Department of Mathematics, North Dakota State University, Fargo, ND 58105. *Gyrogroup actions: A generalization of group actions.*

A gyrogroup is a group-like structure, introduced by Abraham A. Ungar in 1988. Gyrogroups share many algebraic properties with groups. In fact, any group may be viewed as a gyrogroup with trivial gyroautomorphisms. In this work we present the notion of gyrogroup actions, which is a natural generalization of the usual notion of group actions. In particular, we prove three celebrated theorems in group theory for gyrogroups: the orbit-stabilizer theorem, the Burnside lemma (or the Cauchy-Frobenius lemma), and the orbit decomposition theorem. We then prove that under a certain condition, a gyrogroup G acts transitively on the set G/H of left cosets of a subgyrogroup H in G by left gyroaddition. (Received August 17, 2015)