1153-20-311 **Hung P. Tong-Viet*** (tongviet@math.binghamton.edu), 4400 Vestal Parkway East, Binghamton, NY 13902. *Conjugacy classes of p-elements and normal p-complements.* Preliminary report.

The commuting probability $d(G)$ of a finite G (introduced by Erdős and Turán in 1968), is defined to be the probability that two randomly chosen elements of G commute. Erdős and Turán show that $d(G) = k(G)/|G|$, where $k(G)$ is number of conjugacy classes of G. In 1973, W. H. Gustafson proved that $d(G) \leq 5/8$ for any non-abelian group G. Since then, there are numerous results concerning the structure of finite groups using various bounds on the commuting probability. In this talk, I will discuss a p-local version of the commuting probability. Specifically, for a prime p, we define $d_p(G)$ to be the ratio $k_p(G)/|P|$, where $k_p(G)$ is the number of conjugacy classes of p-elements of G and P is a Sylow p-subgroup of G. Using the invariant $d_p(G)$, we obtain some new criteria for the existence of normal p-complements in finite groups. (Received August 30, 2019)