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Attila Maroti, Realtanoda UTCA 13-15, Budapest H-1053, Hungary, and **Hung Ngoc Nguyen*** (hungnguyen@uakron.edu), Department of Mathematics, The University of Akron, Akron, OH 44325. *On the number of conjugacy classes of π -elements in finite groups.*

The probability that two elements of a finite group G commute is $d(G) := k(G)/|G|$ where $k(G)$ is the number of conjugacy classes of G . This has been a topic of interest for many years, dating back to the works by Gustafson in the seventies and later by Lescot in the nineties. Let π be a set of primes and consider the π -local analogue $d_\pi(G) := k_\pi(G)/|G|_\pi$ where $k_\pi(G)$ is the number of conjugacy classes of π -elements in G . Since $d(G)$ encodes a lot of structural information of G , it is expected that $d_\pi(G)$ also provides some information on the π -local structure of G .

We prove that if $d_\pi(G) > 5/8$ then G possesses an abelian Hall π -subgroup which meets every conjugacy class of π -elements of G – a result that can be viewed as a local version and generalization of Gustafson’s result stating that if $d(G) > 5/8$ then G is abelian. We also prove that there is no possible value of $d_\pi(G)$ in $(2/3, 1) \cup (1, \infty)$ and describe the structure of finite groups with $d_\pi(G) = 1$ or $2/3$. This is a joint work with Attila Maroti. (Received August 10, 2013)