**ON THE SUBGROUP GENERATED BY AUTOCOMMUTATORS**

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It is well-known that the set of all commutators in a group is not necessarily a subgroup, see for instance the nice survey by L-C. Kappe and R.F. Morse [4]. Many authors have considered subsets of a group $G$ related to commutators asking if they are subgroups.

Now let $(G, +)$ be an abelian group. With $g \in G$ and $\varphi \in Aut(G)$, the automorphism group of $G$, we define the autocommutator of $g$ and $\varphi$ as

$$[g, \varphi] = -g + g^{\alpha}.$$

We denote by

$$K^{\star}(G) = \{[g, \varphi] \mid g \in G, \varphi \in Aut(G)\}$$

the set of all autocommutators of $G$ and, following [2], we write

$$G^{\star} = \langle K^{\star}(G) \rangle.$$

D. Garrison, L-C. Kappe and D. Yull proved in [1] that in a finite abelian group the set of autocommutators always forms a subgroup. Furthermore they found a nilpotent group of class 2 and of order 64 in which the set of all autocommutators does not form a subgroup, and they proved that it is an example of minimal order.

In this talk we will discuss the relationship between $K^{\star}(G)$ and $G^{\star}$ in infinite abelian groups, as done in [3] jointly with L-C. Kappe and M. Maj.

## References

[1] D. Garrison, L-C. Kappe and D. Yull,, *Autocommutators and the Autocommutator Subgroup*, Contemp. Math. **421** (2006), 137–146.

[2] P.V. Hegarty, *Autocommutator Subgroup of Finite Groups*, J. Algebra **190** (1997), 556–562.

[3] L-C Kappe, P. Longobardi and M. Maj,, *On Autocommutators and the Autocommutator Subgroup in Infinite Abelian Groups*, in preparation.

[4] L-C. Kappe and R.F. Morse,, *On commutators in groups*, Groups St. Andrews 2005, Vol. 2, 531–558. London Math. Soc. Lecture Notes Ser., **340**, Cambridge University Press, 2007

* Joint work with Luise-Charlotte Kappe and Mercede Maj