

## Some finiteness conditions on centralizers or normalizers in groups

MARIA TOTA

Dipartimento di Matematica, Università di Salerno

E-mail: mtota@unisa.it

### Abstract

We consider the following two finiteness conditions on centralizers and normalizers in a group  $G$ : (i)  $|C_G(x) : \langle x \rangle| < \infty$  for every  $\langle x \rangle \triangleleft G$  and (ii)  $|N_G(H) : H| < \infty$  for every  $H \triangleleft G$ . We show that (i) and (ii) are equivalent in the classes of locally finite groups and locally nilpotent groups. In both cases, the groups satisfying these conditions are a special kind of cyclic extensions of Dedekind groups. We also study a variation of (i) and (ii), where the requirement of finiteness is replaced with a bound. In this setting, we extend our analysis to the classes of periodic locally graded groups and non-periodic groups. While the two conditions are still equivalent in the former case, in the latter the condition about normalizers is stronger than that about centralizers.