ERRATUM: Extensions of periodic linear groups with finite unipotent radical

Richard E. Phillips†, Michigan State University
Julianne G. Rainbolt, Saint Louis University
Jonathan I. Hall, Michigan State University
Ulrich Meierfrankenfeld, Michigan State University

We thank Professor B.A.F. Wehrfritz for pointing out that the main Theorem 1.5 of [2] is incorrect.

The first two authors showed in [1] that the quotient G/H of the periodic linear group G in characteristic p remains p-linear provided the unipotent radical of G is trivial. The paper [2] sought a converse, asking: if G/H and H are both p-linear with finite unipotent radical, then when must G also be p-linear? As Professor Wehrfritz noted, the further condition assumed in [2], that the Hirsch-Plotkin radical of H is Černikov, is not sufficient.

A correct result with a similar proof is:

THEOREM. *Let H be a normal subgroup of G and assume that*

(*a*) *G/H is a periodic p-linear group with finite unipotent radical;*

(*b*) *H is a periodic p-linear group with finite unipotent radical;*

(*c*) *$Res(G/H)$ has finite index in G/H.*

Then G is p-linear.

Here $Res(G/H)$ is the intersection of all subgroups of finite index in the group G/H. In particular, if the Hirsch-Plotkin radical of G/H as in (a) is Černikov, then $Res(G/H)$ has finite index in G/H, as desired in (c).

A revision of [2] containing the theorem can be found at:

`www.math.msu.edu/~meier/Preprints/preprints.html`

Example (3.3) of [2] is no longer germane. Indeed, it is possible to bound the representation degree of G, as in the theorem, in terms of the degrees of H and G/H and the index $|G/H : Res(G/H)|$.

References

[1] R.E. Phillips and J.G. Rainbolt, Images of periodic linear groups, Arch. Math. **71** (1998), 97–106.

[2] R.E. Phillips, J.G. Rainbolt, J.I. Hall, and U. Meierfrankenfeld, Extensions of periodic linear groups with finite unipotent radical, Comm. Algebra **31** (2003), 959–968.