1071-20-45 **Bernhard Amberg*** (amberg@mathematik.uni-mainz.de), Institut fuer Mathematik, Universitaet Mainz, D-55128 Mainz, Germany. *Groups covered by dihedral groups.*

It is well-known that two distinct involutions in any group generate a dihedral group. A group is locally dihedral if it has a local system of dihedral subgroups. Obviously periodic locally dihedral groups are locally finite and every finite subgroup is contained in a (finite) dihedral subgroup.

It is easy to see that every locally finite group which is 'saturated' by dihedral subgroups in the latter sense is locally dihedral. Shlyopkin and Rubashkin (2005) have shown that this also holds for some further classes of periodic groups G, for instance when the elements of G have bounded period or when each pair of conjugate elements of prime order generates a finite group.

In joint work with L. Kazarin we show that in fact all periodic groups in which every finite subgroup is contained in a dihedral subgroup are locally dihedral.

The proof of this theorem depends heavily on the following solubility criterion for factorized groups, which is of independent interest.

Theorem. If the group $G = AB$ is the product $G = AB$ of two periodic locally dihedral subgroups A and B, then G is soluble. (Received February 05, 2011)