Collin Bleak, Martin Kassabov and Francesco Matucci* (matucci@math.cornell.edu), 310 Malott Hall, Ithaca, NY 14853. Structure Theorems for Subgroups of Homeomorphisms Groups of the Unit Circle. Preliminary report.

We give a classification of the solvable subgroups $G$ of the group $PL_0(S^1)$ of all orientation-preserving piecewise-linear homeomorphisms of the circle, with finitely many breakpoints. The key tool is proving that the rotation number map is a group homomorphism and it is done by relating the dynamics of $G$ and its group structure. Applications include new proofs of known results as the Margulis' theorem on the existence of a $G$-invariant probability measure on $S^1$. (Received September 20, 2007)