1044-05-14 **Saad El Zanati** and **Peter Johnson*** (johnspd@auburn.edu), Department of Mathematics and Statistics, Auburn University, AL 36849, and **Wenhau Zhao**. *Partitioning cyclic groups into cosets of different subgroups.* Preliminary report.

The (left or right) cosets of any subgroup of a group partition the group; but what about partitioning the group into cosets of different subgroups? If the group is the integers with addition, the question is how the integers can be partitioned into full (2-way infinite) arithmetic progressions with different differences. This problem was of interest to Erdos and others in the 1950's, and has never been entirely settled. We resurrect and refine a solution by Livshits of a problem of N.B.Vasiliev on partitioning the vertices of regular polygons to obtain good necessary conditions for partitioning finite cyclic groups into cosets of different subgroups; these results bear on the infinite case. (Received June 18, 2008)