1025-20-102   **Chris Hruska*** (`chruska@uwm.edu`). *Relative Hyperbolicity of Countable Groups.*

In the 1980's, Gromov promoted the idea of studying finitely generated groups as metric spaces, using the word metric for a finite generating set. This geometry is well-defined up to quasi-isometries. In fact, arbitrary countable groups are also natural geometric objects. Each countable group admits a proper, left invariant metric. For instance, we can consider the group to be a subgroup of a finitely generated group and use the induced subspace metric. The geometry obtained is well-defined up to proper maps. This elementary idea can be used to extend many "coarse" geometric techniques from finitely generated groups to countable groups.

As a first application, we prove that various notions of relative hyperbolicity are equivalent for countable groups. This equivalence was previously understood only in the finitely generated case (by work of Bowditch, Osin, and others). I will also discuss a substantial clarification of the notion of a quasiconvex subgroup of a relatively hyperbolic group. These are the most geometrically natural subgroups, and are themselves relatively hyperbolic. Yet until now their basic study has been hindered by the fact that they are often not finitely generated. (Received January 17, 2007)