

# ALGEBRA SEMINAR

## *Some finiteness properties of infinite groups*

Anthony Gaglione  
Naval Academy

We consider some questions concerning some finiteness properties in infinite groups which are related to Marshall Hall's Theorem. We call these Property  $\mathcal{S}$  and Property  $\mathcal{R}$  and both are trivially true in finite groups. To be specific, if  $A$  and  $B$  are subgroups of a group  $G$  then  $A$  and  $B$  are said to be commensurable if their intersection has finite index in both  $A$  and  $B$ . A group  $G$  satisfies Property  $\mathcal{S}$  if whenever  $A$  and  $B$  are finitely generated commensurable subgroups of  $G$  then their intersection has finite index in their join  $\langle A, B \rangle$ . From a result of Mal'cev finitely generated nilpotent groups satisfy Property  $\mathcal{S}$ . The hypotheses of Mal'cev's theorem we call Property  $\mathcal{R}$  and we show that if a group  $G$  and its subgroups satisfy Property  $\mathcal{R}$ , then  $G$  also satisfies Property  $\mathcal{S}$ .

Monday, April 23, 2007, 1:40 – 2:30 pm,  
Wachman 617