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**Joseph Kirtland\*** ([joe.kirtland@marist.edu](mailto:joe.kirtland@marist.edu)), Department of Mathematics, Marist College, 3399 North Road, Poughkeepsie, NY 12601. *Finding Proper Supplements in Finite Groups*. Preliminary report.

A proper subgroup  $A$  of a finite group  $G$  has a *proper supplement* in  $G$  if there is a proper subgroup  $B$  of  $G$  such that  $G = AB$ . This results in a *proper factorization* of  $G$ . One way to find proper factorizations is to use the formation  $\mathfrak{a}\mathfrak{S}$  of finite  $aS$ -groups (a group  $G$  is an  $aS$ -group if it has order 1 or if every nontrivial subgroup has a proper supplement). This talk will discuss ways in which the  $\mathfrak{a}\mathfrak{S}$ -residual  $G^{\mathfrak{a}\mathfrak{S}}$  of a finite group  $G$  can be used to obtain proper factorizations for  $G$ . The techniques established to determine when  $G^{\mathfrak{a}\mathfrak{S}}$  has a proper supplement in  $G$  will be generalized and used to determine when an arbitrary proper subgroup has a proper supplement in  $G$ . (Received July 25, 2007)