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Joseph Evan* (josephevan@kings.edu), Department of Mathematics, King's College, Wilkes-Barre, PA. *Characterizing Subgroups Satisfying the Strong Frattini Argument in a Direct Product.*

Recently, a group of authors has taken on the project of characterizing subgroup properties in direct products of groups. The ideal situation occurs when a subgroup property can be characterized by conditions from within the direct factors. For example, a subgroup N of the group $G_1 \times G_2$ is normal if and only if $\pi_i(N)/(N \cap G_i) \leq Z(G_i/(N \cap G_i))$ for $i = 1, 2$ where π_i refers to the natural projection of $G_1 \times G_2$ onto G_i .

A subgroup U of a group G *satisfies the Frattini argument in G* if for all normal subgroups K of G , we have $G = KN_G(U \cap K)$. A subgroup U of G then *satisfies the strong Frattini argument in G* if it satisfies the Frattini argument in every subgroup in which it is contained. Subgroups satisfying the strong Frattini argument are of interest in the study of finite solvable groups, where injectors are subgroups that satisfy the strong Frattini argument. In this talk, we will describe a characterization of subgroups of direct products of finite solvable groups that satisfy the strong Frattini argument, and this characterization does in fact only require conditions from within the direct factors. (Received September 12, 2008)