1074-05-178 **Ron Solomn** and **Andrew Woldar*** (andrew.woldar@villanova,edu), Villanoba University, Department of Mathematics and Statisitcs, Villanova, PA 19085. *All simple groups are characterized by their non-commuting graphs.* Preliminary report.

For G a group, we define its non-commuting graph $\nabla(G)$ as follows: The vertex set of $\nabla(G)$ consists of all elements of G that are not in $Z(G)$, and two vertices x, y are adjacent provided they do not commute in G.

It is most natural to seek conditions under which G can be reconstructed from $\nabla(G)$. (Some conditions are surely necessary, as is evidenced by the miniscule example $\nabla(D_8) \cong \nabla(Q_8)$.) A conjecture of Abdollahi, Akbari and Maimani proposes that the property of being a nonabelian simple group is sufficient.

Recently, this conjecture was resolved in the affirmative by Ron Solomon and the speaker. In my talk I will discuss the architecture of the proof, highlighting some of the core ideas. (Received August 20, 2011)