962-55-1277 **Jonathan N. Pakianathan*** (jonpak@math.rochester.edu), Department of Mathematics, University of Rochester, Rochester, NY 14627, and **Ergun Yalcin** (yalcine@fen.Bilkent.EDU.TR), Turkey. *On Commuting and Noncommuting Complexes.*

This is joint work with Ergun Yalcin. In this talk, we will discuss various simplicial complexes associated to the commutative structure of a group G. We define $NC(G)$ (resp. $C(G)$) as the complex associated to the poset of pairwise noncommuting (resp. commuting) sets of nontrivial elements of G. We observe that $NC(G)$ has at most one positive dimensional connected component, which we call $BNC(G)$, and we prove $BNC(G)$ is always simply connected. I will discuss our main result which is a simplicial decompostion formula for $BNC(G)$ which follows from a recent result of A. Bjorner, M. Wachs and V. Welker, on inflated simplicial complexes. As a corrolary, for example, one sees that if G has a nontrivial center or is of odd order, then the homology group $H_{n-1}(BNC(G))$ is nontrivial for every n such that G has a maximal noncommuting set of order n. There is a duality between $NC(G)$ and $C(G)$ coming from the Ramsey duality of their underlying 1-skeleta. This is true also for their p-local analogs. On the other hand it is easy to argue that $C_p(G)$ is homotopy equivalent to Quillen's complex $A_p(G)$. We'll discuss some interesting results on $NC_p(G)$ coming from some of Quillen's results on $A_p(G)$ which follow from this duality. (Received October 03, 2000)