1067-19-257 **Paul Frank Baum*** (baum@math.psu.edu), Mathematics Department, Penn State University, University Park, PA 16802. *Dirac operator and K-theory for discrete groups.*

This talk will give the Dirac operator formulation of the BC (Baum-Connes) conjecture. This conjecture (when valid) has a number of corollaries. One of these is the Gromov- Lawson-Rosenberg conjecture which says that the only obstruction to a closed Spin manifold stably admitting a Riemannian metric of positive scalar curvature is the index of the Spin manifold's Dirac operator.

To state BC from the Dirac operator point of view, fix a (countable) discrete group G and consider pairs (M, E) where M is a Spin-c manifold without boundary with a given proper and co-compact action of G by diffeomorphisms which preserve the Spin-c structure of M. E is a G-equivariant complex vector bundle on M. On the collection of all such pairs (M, E) impose the equivalence relation generated by three elementary steps : (1) bordism (2) direct sum -disjoint union (3) vector bundle modification.This gives an abelian group which is the left side of BC.

The right side of BC is the K-theory of the reduced C* algebra of G. The map from the left to the right side sends a pair (M, E) to the index of the Dirac operaror of M twisted by E. BC asserts that this index map is an isomorphism. In particular, BC says that the index is a complete invariant for the above equivalence relation. (Received August 13, 2010)