1086-55-431 **Daniel A Ramras*** (ramras@nmsu.edu) and **Thomas Baird**. *Stable representation theory and the geometry of flat connections.*

In the 1960's, Atiyah and Segal studied the map $R(G) \to K(BG)$ sending a representation of G to the induced bundle over the classifying space BG. We consider a natural generalization of this map to spherical families of (finite-dimensional, unitary) representations of infinite discrete groups. This topological Atiyah-Segal map is closely linked to the natural map $\mathrm{Hom}(G, U(n)) \to \mathrm{Map}(BG, BU(n))$, and is thereby related to various questions about (families of) flat bundles over BG. On the other hand, this map can be described in terms of a homotopy limit problem for Carlsson's deformation K-theory functor. This brings methods from stable homotopy theory to bear, leading to various results for (products of) aspherical surfaces, tori, and flat manifolds. Parts of this work are joint with Tom Baird. (Received September 01, 2012)