1046-55-807 **Daniel A Ramras*** (dan.ramras@vanderbilt.edu), 1326 Stevenson Center, Department of Mathematics, Vanderbilt University, Nashville, TN 94305. *New developments in the topology of representation spaces.*

In recent years, progress has been made from a number of directions in understanding the topology of representation spaces associated to infinite discrete groups. I will describe a homotopy theoretical method, based on Carlsson's notion of deformation K-theory, for studying these spaces after stabilization. This method relies heavily on work of Tyler Lawson and has produced concrete results in a variety of cases, including fundamental groups of surfaces and related spaces. I'll also describe some conjectures relating these spaces to topological K-theory. These conjectures closely resemble well-known results and conjectures in topological and algebraic K-theory.

There has also been progress in studying representation spaces before stabilization. In particular, I'll discuss Morse theoretical methods introduced by Ho and Liu, which have produced cohomological information about the representation spaces of non-orientable surface groups. (Received September 11, 2008)