Quillen-Lichtenbaum Phenomena in Stable Representation Theory

Abstract: In the early 60's, Atiyah, Hirzebruch, and Segal studied a map from the representation ring of a compact Lie group G to the K-theory of the classifying space BG. For infinite discrete groups, an analogous map exists on the level of representation spaces and their associated deformation K-theory spectra. Computations have shown that in certain interesting cases, this map is an equivalence on highly connected covers, a fact which has several geometric implications. This situation is closely analogous to the Quillen-Lichtenbaum conjectures in algebraic K-theory, which are known to fail in low dimensions. In this case, the low-dimensional failure admits a concrete geometric explanation, relying on methods from differential and algebraic geometry. Portions of this work are joint work with Tom Baird and with Willett and Yu.