Nonlinearity, Proper Actions and Stable Homotopy Theory

In this talk, I will extend the notion of equivariant co-homotopy to the context of proper actions of lie groups. The definition involves certain cocycles consisting of a nonlinear perturbation of a Fredholm operator defined on G-Hilbert bundles. The need to do this resides in the lack of finite dimensional representations and finite dimensional equivariant vector bundles to represent equivariant cohomology theories. The proof of the coincidence to other approaches uses a nonlinear index theory, which opens the door to applications in analysis.