In my talk I explain how to construct new equivariant harmonic self-maps of spheres.

Recently, Thomas Pützmann and I developed in [PS] the theory of equivariant harmonic self-maps of compact cohomogeneity one manifolds. The problem of constructing such harmonic self-maps is reduced to solving non-standard singular boundary value problems for non-linear ordinary differential equations.

In this talk we will restrict to those actions on spheres inducing so-called isoparametric foliations of spheres. Numerical experiments indicate that the associated singular boundary value problems admit either infinitely many solutions with 'low—rq degree or finitely many solutions with non-trivial (i.e. \( \neq 0, \pm 1 \)) degree. In this talk I will explain how to construct solutions for the second case - this is technically more complicated than the first case (which has for example been addressed in [S1] and [S2]). More precisely, we show that there exist two harmonic self-maps of \( S^9 \) with Brouwer degree 5 and two harmonic self-maps of \( S^{13} \) with Brouwer degree 7.

