

Isoparametric functions on exotic spheres

In this talk, we focus on the topic about isoparametric functions on Riemannian manifolds. In the first part, we recall the results of isoparametric functions on real space forms and general Riemannian manifolds. Actually, a general way is developed to construct Riemannian metrics and isoparametric functions. In the second part, exotic spheres and related studies are introduced. In the third part, existence or non-existence results of isoparametric functions on exotic spheres and Eells-Kuiper projective planes are established by our general construction. In particular, every homotopy n -sphere ($n > 4$) is proved to carry an isoparametric function (with certain metric) with 2 points as the focal set. In the fourth part, applications and related topics of isoparametric functions are surveyed. This talk is based on the joint work with Professor Zizhou Tang.