András Csépai

Title: Quasi-holomorphic maps

Abstract: I will introduce a new notion, called quasi-holomorphic maps. These are real smooth maps $f\colon M \to P$ equipped with a structure that imitates the singularities and singularity stratifications of holomorphic maps on the source and target manifolds M and P, although the manifolds themselves carry no global complex structures. Important examples of quasi-holomorphic maps are branched coverings and links of finitely determined holomorphic map germs. A motivation for introducing this notion is that many global singularity theoretic properties of quasi-holomorphic maps are the same as those of holomorphic maps, but quasi-holomorphic maps are far less rigid with respect to various deformations that do not change these properties. I will show a Pontryagin–Thom type construction for a "universal" quasi-holomorphic map with prescribed (multi)singularities. Applying this, we will see that known invariants of (multi)singular loci of holomorphic maps (e.g. Thom polynomials) extend to quasi-holomorphic maps without change. As another application, I will define the cobordism groups of quasi-holomorphic maps with restricted (multi)singularities, whose classifying space was given by the above construction. If time permits, I will state a few structural results on these cobordism groups. This is a joint work with András Szűcs.