Classification theorems for manifolds with $\mathbb{R}$-action.

GERARDO A. MENDOZA

Abstract: A complex b-manifold is a manifold $\mathcal{M}$ with boundary together with an involutive sub-bundle ${}^bT^{0,1}\mathcal{M}$ of the complexification, $\mathbb{C}\,{}^bT\mathcal{M}$, of its b-tangent bundle such that ${}^bT^{0,1}\mathcal{M} + \overline{{}^bT^{0,1}\mathcal{M}} = \mathbb{C}\,{}^bT\mathcal{M}$ as a direct sum. The boundary of such a manifold inherits a structure which in the compact case resembles that of a circle bundle of a Hermitian holomorphic line bundle over a compact complex manifold. In my talk I will give a brief introduction to complex b-manifolds, describe how the structure on the boundary is obtained, and present classification theorems for such structures generalizing the classification of complex line bundles by their Chern class and of holomorphic line bundles by the Picard group. These classification theorems permit the construction of new complex b-manifolds out of a given one.