Mathematics > Differential Geometry

Free CR distributions

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There are only some exceptional CR dimensions and codimensions such that the geometries enjoy a discrete classification of the pointwise types of the homogeneous models. The cases of CR dimensions n and codimensions n^2 are among the very few possibilities of the so called parabolic geometries. Indeed, the homogeneous model turns out to be $\PSU(n+1,n)/P$ with a suitable parabolic subgroup P. We study the geometric properties of such real $(2n+n^2)$-dimensional submanifolds in $\mathbb C^{n+n^2}$ for all $n>1$. In particular we show that the fundamental invariant is of torsion type, we provide its explicit computation, and we discuss an analogy to the Fefferman construction of a circle bundle in the hypersurface type CR geometry.

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