

POLARIZED AND G -POLARIZED CR MANIFOLDS.

Polarized and G -polarized CR manifolds are smooth manifolds endowed with a double structure: a real foliation \mathcal{F} (given by the action of a Lie group G in the G -polarized case) and a transverse CR distribution (E, J) . Polarized means that (E, J) is roughly speaking invariant by \mathcal{F} . Both structures are therefore linked up. The interplay between them gives to polarized CR-manifolds a very rich geometry. Firstly, the invariance property makes of \mathcal{F} a transversely holomorphic foliation. Then it implies that these CR structures have a finite-dimensional local moduli space, which almost never occurs for general CR structures. Finally, sasakian manifolds (and normal almost contact manifolds) are included as a basic example.

In this mini-course, I will give the precise definitions of these manifolds and review some of their properties, putting special emphasis on deformation theory.

If time permits, I plan to touch the following topics:

- i) G -polarized structures as geometric structures on manifolds.
- ii) Classification of transversely holomorphic flows on 3-manifolds, following Brunella and Ghys.
- iii) Basics of Kodaira-Spencer and Kuranishi deformation theory.
- iv) Local moduli space for polarized CR structures.