

TEMPLE UNIVERSITY
Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

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Aberrant CR Structures

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A CR structure on M^{2n+1} is said to be realizable if it can be identified with the structure induced on some real hypersurface in \mathbb{C}^{n+1} . In this situation, there is a rich set of CR functions. The opposite case is when the only CR functions are the constants. Such a structure is called aberrant.

Theorem 1. The aberrant structures are dense in the set of all CR structures on \mathbb{R}^3 .

In higher dimensions the Levi form becomes important.

Theorem 2. If at a point $p \in M^{2n+1}$ the Levi form has n non-zero eigenvalues and has signature $n - 2$ (or $2 - n$) then the CR structure may be perturbed so that $df(p) = 0$ for every function which is CR near p .

The existence of aberrant structures for $\dim M > 3$ is an open question. (An erroneous existence proof was published in 1983.)