NORDAN 2016: Several Complex Variables

On the nonvanishing of abstract Cauchy-Riemann cohomology groups

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In this talk, I will discuss a joint work with C.D. Hill and M. Nacinovich. Namely we considered abstract smooth CR structures on a smooth manifold M, and the associated global abstract cohomology groups $H^{p,q}(M)$, which are the analogues of the Dolbeault cohomology groups. We have shown that some of these global cohomology groups must be infinite dimensional, or non Hausdorff, whenever one has a certain condition on the Levi form of the CR structure. What makes our results curious is that the required condition on the Levi form needs to be satisfied only at a single (mircro-local) point on M; yet the conclusion is global.