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TREPREAU'S EXAMPLE, A PEDESTRIAN APPROACH

by Jean-Pierre ROSAY

I. INTRODUCTION

A few years ago J.M. Trepreau gave an example of a nondecomposable *CR* function, answering in the negative an outstanding question in several complex variables and microlocal analysis. The example appeared finally in print in [7], and it is magnificently explained there. Trepreau's example can also be explained by Tumanov's theory, without F.B.I., see [10].

However, I am writing this paper!

It is my goal to go through Trepreau's example with the naïvest tools (e.g. without appealing to the Hanges-Sjöstrand theorem, or to Tumanov's theory of disks). In my mind, such a basic example (in *CR* analysis and in polynomial convexity) deserves a "pedestrian" approach. Parts II-IV of the paper use only very classical tools in several complex variables and the Baouendi-Treves approximation ([3]) which is a very natural extension of Weierstrass approximation. In II, I describe what I consider to be the heart of the matter. It takes place in $\mathbf{C}^2$. In III a lifting process from $\mathbf{C}^2$ to $\mathbf{C}^3$ is discussed. It is used in IV to show, in Trepreau's example, the existence of nondecomposable *CR* functions. In V, we use F.B.I. (the simplest version suffices, and it is used in a very simple way) to complete the results given in II and III. Proposition 2 (the cone and the wedge) may be of independent interest (but cannot be claimed as being original). Finally the title of VI ("Trepreau does more") says it all!

The reader can look at [4] for the basic theory of *CR* functions, and at [1], especially §9, for positive results on wedge decomposability, background information, and further references. Notations given in II will be kept in the whole paper.

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