

A NEW PROOF OF GABRIELOV'S RANK THEOREM

OCTAVE CURMI

Abstract: This talk concerns Gabrielov's rank Theorem, a fundamental result in local complex and real-analytic geometry, proved in the 1970's. Contrasting with the algebraic case, it is not in general true that the analytic rank of an analytic map (that is, the dimension of the analytic-Zariski closure of its image) is equal to the generic rank of the map (that is, the generic dimension of its image). This phenomenon is involved in several pathological examples in local real-analytic geometry. Gabrielov's rank Theorem provides a formal condition for the equality to hold. Despite its importance, the original proof is considered very difficult. There is no alternative proof in the literature, besides a work from Tougeron, which is itself considered very difficult. I will present a new work in collaboration with André Belotto da Silva and Guillaume Rond, where we provide a complete proof of Gabrielov's rank Theorem, for which we develop formal-geometric techniques, inspired by ideas from Gabrielov and Tougeron, which clarify the proof. I will start with some fundamental examples of the phenomenon at hand, and expose the main ingredients of the strategy of this difficult proof.