

Estimates for the Cartan lemma on holomorphic matrices, and generalization

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We start with the well-known Cartan lemma on factorization of holomorphic matrices defined on the intersection of two rectangles. We prove a uniform estimate for the factors depending on the size of the rectangles (which is quite simple, but sharp, in some sense). Then we discuss such estimates for more general cocycles of holomorphic matrices of one complex variable. If the cocycle belongs to a covering with non-empty intersections of at least three covering sets, the problem becomes interesting. Applications to several variables appear, but also unsolved open questions remain.