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Holomorphic Extension Theorems in Lipschitz Domains of $\mathbb{C}^2$

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Abstract. The holomorphic functions of several complex variables are closely related to the continuously differentiable solutions $f : \mathbb{R}^{2n} \mapsto \mathbb{C}_n$ of the so-called isotonic system

$$\partial_{\underline{x}_1} + i\tilde{f}\partial_{\underline{x}_2} = 0.$$

The aim of this paper is to bring together these two areas which are intended as a good generalization of the classical one-dimensional complex analysis. In particular, it is of interest to study how far some classical holomorphic extension theorems can be stretched when the regularity of the boundary is reduced from C^1-smooth to Lipschitz. As an illustration, we give a complete viewpoint on simplified proofs of Kytmanov-Aronov-Aĭzenberg type theorems for the case $n = 2$.

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