SEMI-GLOBAL SOLUTIONS OF $\bar{\partial}_b$
WITH $L^p$ ($1 \leq p \leq \infty$) BOUNDS
ON STRONGLY PSEUDOCONVEX REAL
HYPERSURFACES IN $\mathbb{C}^n$ ($n \geq 3$)

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Abstract

Let $M$ be an open subset of a compact strongly pseudoconvex hypersurface \{\rho = 0\} defined by $M = D \times \mathbb{C}^{n-m} \cap \{\rho = 0\}$, where $1 \leq m \leq n-2$, $D = \{\sigma(z_1, \ldots, z_m) < 0\} \subset \mathbb{C}^m$ is strongly pseudoconvex in $\mathbb{C}^m$. For $\bar{\partial}_b$ closed $(0,q)$ forms $f$ on $M$, we prove the semi-global existence theorem for $\bar{\partial}_b$ if $1 \leq q \leq n-m-2$, or if $q = n-m-1$ and $f$ satisfies an additional “moment condition”. Most importantly, the solution operator satisfies $L^p$ estimates for $1 \leq p \leq \infty$ with $p = 1$ and $\infty$ included.

Keywords. $\bar{\partial}_b$, CR manifold.


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