# $L^p$ BOUNDS FOR RIESZ TRANSFORMS AND SQUARE ROOTS ASSOCIATED TO SECOND ORDER ELLIPTIC OPERATORS

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**Abstract**

We consider the Riesz transforms $\nabla L^{-1/2}$, where $L \equiv -\operatorname{div} A(x)\nabla$, and $A$ is an accretive, $n \times n$ matrix with bounded measurable complex entries, defined on $\mathbb{R}^n$. We establish boundedness of these operators on $L^p(\mathbb{R}^n)$, for the range $p_n < p \le 2$, where $p_n = 2n/(n+2)$, $n \ge 2$, and we obtain a weak-type estimate at the endpoint $p_n$. The case $p = 2$ was already known: it is equivalent to the solution of the square root problem of T. Kato.