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Nicholas Boros* (nboros@olivet.edu), Olivet Nazarene University, Department of Mathematics, One University Avenue, Bourbonnais, IL 60914. *Matrix Weights, Littlewood-Paley Inequalities and the Riesz Transform.*

We will discuss estimates for the squares of the Riesz transforms R_1^2, \dots, R_m^2 on $L^2(W)$ where $W \in \mathbb{C}^{d \times d}$ is an A_2 weight. We will show that if the “Heat A_2 characteristic” of W is sufficiently close to 1 then there is a dimensional constant $c > 0$ such that

$$\|R_i^2\|_{2,W} \leq 1 + c\sqrt{[W]_{A_2^h} - 1},$$

for all $i = 1, \dots, m$. This is accomplished by proving a Littlewood-Paley estimate with the use of the Bellman function technique. This is a joint result with Nikolaos Pattakos. (Received January 14, 2016)