1116-42-878 **Laura Cladek*** (`cladek@math.wic.edu`), 480 Lincoln Dr., Madison, WI 53706. *Bochner-Riesz multipliers associated to convex planar domains with rough boundary.*

We consider generalized Bochner-Riesz multipliers $(1-\rho(\xi))_+^\lambda$ where $\rho(\xi)$ is the Minkowski functional of a convex domain in $\mathbb{R}^2$, with emphasis on domains for which the usual Carleson-Sjölin L^p bounds can be improved. We produce convex domains for which previous results due to Seeger and Ziesler are not sharp. For integers $m \geq 2$, we find domains such that $(1-\rho(\xi))_+^\lambda \in M^p(\mathbb{R}^2)$ for all $\lambda > 0$ in the range $\frac{m}{m-1} \leq p \leq 2$, but for which $\inf\{\lambda : (1-\rho)_+^\lambda \in M_p\} > 0$ when $p < \frac{m}{m-1}$. We identify two key properties of convex domains that lead to improved L^p bounds for the associated Bochner-Riesz operators. First, we introduce the notion of the "additive energy" of the boundary of a convex domain. Second, we associate a set of directions to a convex domain and define a sequence of Nikodym-type maximal operators corresponding to this set of directions. We show that domains that have low higher order energy, as well as those which have asymptotically good L^p bounds for the corresponding sequence of Nikodym-type maximal operators, have improved L^p bounds for the associated Bochner-Riesz operators over those proved by Seeger and Ziesler. (Received September 14, 2015)