

# Bilinear Bochner-Riesz means and square function

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**Abstract:** In this talk I shall discuss  $L^p$  estimates of the bilinear Bochner-Riesz square function.

The bilinear Bochner-Riesz square function is defined by

$$\mathcal{G}^\alpha(f, g)(x) := \left( \int_0^\infty \left| \frac{d}{dR} \mathcal{B}_R^{\alpha+1}(f, g)(x) \right|^2 R \, dR \right)^{1/2},$$

where  $\alpha$  is a complex number with  $\operatorname{Re}(\alpha) > -1$  and  $f, g$  are Schwartz class functions and  $\mathcal{B}_R^{\alpha+1}$  is bilinear Bochner-Riesz means with index  $\alpha + 1$ . The bilinear Bochner-Riesz square function is genuine bilinear analogue of Stein's square function. They play important role in the study of maximal-Fourier multiplier operators and in particular, in the study of maximal Bochner-Riesz functions.

In this talk I shall prove necessary and sufficient conditions on exponents  $p_1, p_2, p$  and  $\alpha$  such that the estimate

$$\|\mathcal{G}^\alpha(f, g)\|_{L^p} \lesssim \|f\|_{L^{p_1}} \|g\|_{L^{p_2}}$$

holds.