

On Fefferman-Stein-type inequality for Shilov boundaries and applications

Ji Li

Abstract. In this paper, we establish a Fefferman-Stein-type inequality for the area integral and the non-tangential maximal function on the Shilov boundary studied by Nagel-Stein [30]. The technique here is inspired by Fefferman-Stein [14] and Merryfield [22] but we bypass the use of the Fourier or group structure as these are not available on the polynomial domains of finite type. Direct applications include the maximal function characterisation of product Hardy space and the weak-type endpoint estimate for products of Calderón-Zygmund operators (such as the Cauchy-Szegő projection) on the Shilov boundary.

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