 Remarks on Littlewood–Paley Analysis

Kwok-Pun Ho

Abstract. Littlewood–Paley analysis is generalized in this article. We show that the compactness of the Fourier support imposed on the analyzing function can be removed. We also prove that the Littlewood–Paley decomposition of tempered distributions converges under a topology stronger than the weak-star topology, namely, the inductive limit topology. Finally, we construct a multiparameter Littlewood–Paley analysis and obtain the corresponding “renormalization” for the convergence of this multiparameter Littlewood–Paley analysis.

Department of Mathematics, Hong Kong University of Science and Technology, Hong Kong, China
e-mail: makho@ust.hk

Received by the editors December 20, 2005; revised March 21, 2006.
AMS subject classification: 42B25.
Keywords: Littlewood–Paley analysis, distributions.