A GENERAL FATOU LEMMA FOR THE GELFAND INTEGRAL

PETER LOEB

Topics #4 and #5: Nonstandard Methods in Functional Analysis. Nonstandard methods in measure theory, stochastic analysis, probability and statistics.

[Joint work with Yeneng Sun.]

A general Fatou Lemma is established for a sequence of Gelfand integrable functions from a vector Loeb space to the dual of a separable Banach space, or for a stronger conclusion, Banach lattice. A corollary sharpens previous results in the finite dimensional setting even for the case of scalar measures. Examples show that a vector measure space formed from Lebesgue spaces will not suffice as the underlying space for the result.

Department of Mathematics, University of Illinois, Urbana, USA
E-mail address: loeb@math.uiuc.edu

1 Department of Mathematics, National University of Singapore; and Department of Economics, National University of Singapore, E-mail: matsuny@nus.edu.sg.