Electronic Journal: Southwest Journal of Pure and Applied Mathematics
Internet: http://rattler.cameron.edu/swjpam.html
ISSN 1083-0464
Issue 2, December 2002, pp. 64–67.
Submitted: March 12, 2002. Published: December 31 2002.

EIGENFUNCTIONS OF LAPLACIAN BY BOUNDEDNESS CONDITIONS IN BOUNDED HYPERFUNCTIONS AND DISTRIBUTIONS

Bishnu P. Dhungana

Abstract. R. S. Strichartz has proved the following theorem: "If $\{f_j(x)\}_{j\in\mathbb{Z}}$ is a doubly infinite sequence of functions on $\mathbb{R}^n$ satisfying (i) $\triangle f_j = f_{j+1}$ and (ii) there exists a constant M such that $|f_j(x)| \leq M$ for all $j \in \mathbb{Z}$ and all $x \in \mathbb{R}^n$, then $\triangle f_0 = -f_0$" in (*Characterization of eigenfunctions of the Laplacian by boundedness conditions*, Trans. Amer. Math. Soc. **338** (1993), 971–979). We generalize it in the space of bounded hyperfunctions via heat kernel and in the space of distributions via regularization of distributions.

1991 A.M.S. (MOS) Subject Classification Codes. 46Fxx

Key Words and Phrases. Heat kernel, bounded hyperfunctions, distributions

Department of Mathematics, Seoul National University, Seoul 151-742, Korea
E-mail Address: bishnupd2001@yahoo.com
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