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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.

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