Meeting: 1003, Atlanta, Georgia, SS 22A, AMS Special Session on Spaces of Vector-Valued Functions, I

1003-46-105 **Paul Lewis** and **Kimberly Muller***, Lake Superior State University, Comp. and Math. Sci. Department, Sault Ste. Marie, MI 49783-1699. *Isomorphic Embeddings and Strongly Additive Measures.*

The σ-algebra version of the Diestel - Faires Theorem can be stated as follows. If $\mu : \Sigma \to X$ is bounded, finitely additive, and not strongly additive, then there is a pairwise disjoint sequence (A_n) in Σ so that if n is identified with A_n and ν is the restriction of μ to $\sigma((A_n)_{n=1}^{\infty})$, then $J(b) = \int b d\nu$ defines an isomorphic embedding of ℓ_∞ into X. (If $\mathcal{P}$ denotes the σ-algebra of all subsets of $\mathbf{N}$, then we identify $\mu : \sigma((A_n)) \to X$ with $\nu : \mathcal{P} \to X$.)

Although μ - or ν - fails to be countably additive, there is a strong sense in which ν is countably additive.

Theorem *If E is any infinite dimensional Banach space with an unconditional Schauder basis and both J and ν are as above, then there is an isomorphic embedding $L : J(\ell_\infty) \to L(E, E)$ and an infinite subset M of $\mathbf{N}$ so that $L \circ \nu : \sigma(M) \to L(E, E)$ is countably additive in the strong operator topology.*

Simple proofs of several classical theorems, including the Orlicz-Pettis theorem and the Vitali-Hahn-Saks theorem, are given as applications of this result. (Received August 06, 2004)