

ON SOME PROPERTIES OF PETTIS INTEGRAL

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This thesis is concerned with some properties of Pettis integral. What we propose to do is to take a function f with values in Banach space X such that $\{\langle x^*, f(\omega) \rangle \mid \omega \in \Omega\}$ is bounded for every $x^* \in X^*$, form the associated family $\mathcal{F} = \{\langle x^*, f \rangle \mid x^* \in \Gamma\}$ and study some topological properties of \mathcal{F} in the space $L_\infty(\mu)$.

This thesis consists of two parts. In the first part, we deal with the terminologies and basic vector measure theory and Banach space theory, which are used in the second part. These are as follows: the Orlicz-Pettis theorem, the Riesz representation of compact operator on $L_1(\mu)$, the Radon-Nikodým property for the Pettis integral, the Riesz representation of weakly compact operator on $L_1(\mu)$, some equivalent conditions of the Radon-Nikodým property for the Pettis integral, the continuity of the bilinear map which is separately continuous, the metrizability of the compact topological space and the conjugate space $F(\Omega, \Sigma, \mu)$ of the space $L_\infty(\mu)$.

In the second part, we study a Banach-valued function in terms of topological properties of the associated family as a subset of the space $L_\infty(\mu)$.

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