The Orlicz-Pettis Theorem for Multiplier Convergent Series

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An Orlicz-Pettis Theorem is a result which asserts that a series in a topological vector space which converges in a weak topology converges in a stronger topology. The original Orlicz-Pettis Theorem asserts that a series in a normed space which is subseries convergent in the weak topology is subseries convergent in the norm topology. We consider versions of the Orlicz-Pettis Theorem for multiplier convergent series.. If λ is a scalar sequence spaces and Z is a topological vector space a series $\sum_j z_j$ in Z is λ multiplier convergent if the series $\sum_{j=1}^{\infty} t_j z_j$ converges in Z for every $t = \{t_j\} \in \lambda$. For example, if $\lambda = m_0$, the space of sequences with finite range, a series is m_0 multiplier convergent iff the series is subseries convergent. We consider conditions on the multiplier space λ which guarantee that a series which is λ multiplier convergent in the weak topology of a locally convex space is λ multiplier convergent in some stronger topology such as the Mackey topology.

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