

# Inductive and projective limits of Banach spaces of measurable functions with order unities with respect to power parameter

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## Abstract

© 2016, Allerton Press, Inc. We prove that a measurable function  $f$  is bounded and invertible if and only if there exist at least two equivalent norms by order unit spaces with order unities  $f_\alpha$  and  $f_\beta$  with  $\alpha > \beta > 0$ . We show that it is natural to understand the limit of ordered vector spaces with order unities  $f_\alpha$  ( $\alpha$  approaches to infinity) as a direct sum of one inductive and one projective limits. We also obtain some properties for the corresponding limit topologies.

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## Keywords

Banach space, final topology, Fréchet space, inductive limit, initial topology, locally convex space, measurable functions, order unit space, projective limit