Norms supporting the Lebesgue differentiation theorem

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Workshop on Effect Algebras, Boolean Algebras & Related Topics

Udine (Italy) — January 25–27, 2016

Abstract

A version of the Lebesgue differentiation theorem is offered, where the L^p norm is replaced with any rearrangement-invariant norm. Necessary and sufficient conditions for a norm of this kind to support the Lebesgue differentiation theorem will be presented.