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On Zolezzi's Theorem for Infinite Measure Spaces

We discuss the infinite measure counterpart of Zolezzi's Theorem for infinite measure spaces. For a measure space with infinite measure, (Ω, Σ, μ) , we construct a sequence in $L^\infty(\mu)$, with uniformly control upon its support measure, that does not converge in $L^p(\mu)$, for all $1 \leq p < \infty$, however does converge weakly in $L^\infty(\mu)$.

Keywords: Constructive counterexamples, Lebesgue spaces.

MSC: 46E30.