

Title: Nonabsolutely convergent integrals

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Abstract: Our aim is to introduce an integral on a measure metric space, which will be nonabsolutely convergent but including the Lebesgue integral. We start with spaces of continuous and Lipschitz functions, spaces of Radon measures and their dual and predual spaces. We build up the so-called uniformly controlled integral (*UC*-integral) of a function with respect to a distribution. Then we investigate the relationship between the *UC*-integral with respect to a measure and the Lebesgue integral. Then we introduce another kind of integral, called *UCN*-integral, based on neglecting of small sets with respect to a Hausdorff measure. Hereafter, we focus on the concept of  $n$ -dimensional metric currents. We build the *UC*-integral with respect to a current and then we proceed to a very general version of Gauss-Green Theorem, which includes the Stokes Theorem on manifolds as a special case.

Keywords: Nonabsolutely convergent integrals, Multidimensional integrals, Gauss-Green Theorem