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Currents in metric spaces

by

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Introduction

The development of intrinsic theories for area-minimization problems was motivated in the 1950's by the difficulty to prove, by parametric methods, existence for the Plateau problem for surfaces in Euclidean spaces of dimension higher than two. After the pioneering work of R. Caccioppoli [12] and E. De Giorgi [18], [19] on sets with finite perimeter, W. H. Fleming and H. Federer developed in [24] the theory of currents, which leads to existence results for the Plateau problem for oriented surfaces of any dimension and codimension. It is now clear that the interest of this theory, which includes in some sense the theory of Sobolev and BV-functions, goes much beyond the area-minimization problems that were its initial motivation: as an example one can consider the recent papers [3], [8], [27], [28], [29], [35], [41], [42], to quote just a few examples.

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