

Title: On implicitly oscillatory quadrilinear integrals

Abstract: Under appropriate hypotheses, multilinear integrals in which the integrands are products of arbitrary measurable functions composed to smooth mappings to lower-dimensional spaces are majorized by products of negative order Sobolev norms of those functions. Thus if these factors are highly oscillatory, then the integral is small. This type of result stands in contrast to commonly studied situations in which an explicitly oscillatory unimodular factor, coupled with arbitrary measurable factors, results in smallness. A key element of the analysis is a certain class of three term sublevel set inequalities. We will discuss hypotheses, results, and some aspects of the analysis for quadrilinear forms.