SLICING AND INTERSECTION THEORY FOR CHAINS ASSOCIATED WITH REAL ANALYTIC VARIETIES

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1. Introduction

In [F2] H. Federer exhibited the classical complex algebraic varieties as integral currents and applied techniques of geometric measure theory to give new formulations of the algebraic geometer's concepts of dimension, tangent cone and intersection. Wishing to extend such notions to larger classes of geometric objects, he gave geometric-measure-theoretic characterizations of the dimension of a real analytic variety and of the tangent cone of a real analytic chain ([F, 3.4.8, 4.3.18]); he also conjectured in [F, 4.3.20] that the theory of slicing, which has enjoyed several applications in geometric measure theory ([FF, 3.9], [F1], [A], [F2, 3], [B1], [B2], [B3], [F]), could be used to construct a viable intersection theory for real analytic chains. This is the aim of the present paper.

Let $t \geqslant n$ be integers and M be a separable oriented real analytic manifold. A t dimensional locally integral flat current ([F, 4.1.24]) T in M is called a *t dimensional analytic chain in M* if M can be covered by open sets U for which there exist t and $t-1$ dimensional real analytic subvarieties V and W of U with $U \cap \operatorname{spt} T \subset V$ and $U \cap \operatorname{spt} \partial T \subset W$. It then

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