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Abstract

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ABSTRACT

The aim of this seminar, directed by L. Illusie and the author, is to study the Euler-Poincaré characteristic of algebraic varieties or compact analytic varieties.

The starting point of this study is the theorem of MacPherson that states the existence and uniqueness of a theory of Chern classes in homology for algebraic spaces.

To build those classes MacPherson defines a numerical invariant attached to each singular point and called the Euler-number. This Euler number is expressed in the first exposé in terms of intersection numbers of some cycles in the Nash transform. It is also expressed in the exposé 4, for surfaces, in terms of multiplicity of polar varieties. This last result has been extended to the general case by Lé and Teissier.

The computation of the Chern classes involves also curvature forms of Chern-Weil. The integrals of those forms in the neighbourhood of singular points is studied in the exposé 3. The exposé 2 of A. Dubson will be published elsewhere.

The homology Chern classes were first introduced by M.H. Schwartz to compute obstructions to the existence of frames. This point of view is studied in exposés 5 and 6, and in exposé 7 one studies specialization of Chern classes.

The exposés 8 and 9 are devoted to the phenomenon of wild ramification in characteristic $p > 0$. The results are due to Deligne. The last exposé presents an application to the evaluation of some trigonometric sums, results due to Deligne and Katz.

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