

The logarithmic index of vector fields and the theory of residue

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We introduce the notion of logarithmic index of vector fields and differential forms (not necessarily regular) given on singular varieties. Then the corresponding theory will be developed in various settings and some useful relations with classical theories of index and residue will be discussed. Our approach is mainly based on the theory of residues of meromorphic differential forms logarithmic along subvarieties with arbitrary singularities developed by the author in the past few years. As illustrations, we also discuss elementary methods for computing the index on Cohen-Macaulay curves, complete intersections, normal and determinantal varieties, and others.

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