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4. Algebraic Geometry

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On the index of a gradient vector field at an isolated complete intersection singularity

We discuss the notion of the index of a vector field on a singular manifold. In particular we consider manifolds with isolated singularities, i. e., topological spaces which are manifolds (say, C^∞–) outside discrete subsets (sets of singular points) and define a notion of the index of an isolated singular point of a vector field for (germs of) manifolds with, so called, cone-like singularities. We offer a notion of the index of an isolated zero of a vector field on an analytic variety with arbitrary (generally speaking non-isolated) singularities. For a gradient vector field on a (real) isolated complete intersection singularity we give a formula for the index in terms of signatures of certain quadratic forms on the corresponding spaces of thimbles.
The results were obtained with W. Ebeling.