

Singularities of Functions on Manifolds with Boundary and Volume Forms

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Abstract

We present results on the classification of pairs of functions and volume forms on a manifold with boundary. In particular, we give a generalisation of the well known isochore Morse lemma, in the presence of a boundary. The results depend on certain properties of the Gauss-Manin connection on the relative De-Rham cohomology sheaves and in particular, in an analog of the Brieskorn-Sebastiani theorem on the finiteness and freeness of the Brieskorn module associated to an isolated boundary singularity.
