1001-58-345 **Maxim Braverman***, Department of Mathematics, Boston, MA 02115. *Kirwan-Novikov inequalities on a manifold with boundary.*

We extend the Novikov Morse-type inequalities for closed 1-forms in 2 directions. First, we consider manifolds with boundary. Second, we allow a very degenerate structure of the critical set of the form, assuming only that the form is non-degenerated in the sense of Kirwan. In particular, we obtain a generalization of a result of Floer about the usual Morse inequalities on a manifold with boundary. We also obtain an equivariant version of our inequalities. Our proof is based on an application of the Witten deformation technique. The main novelty here is that we consider the neighborhood of the critical set as a manifold with a cylindrical end. This leads to a considerable simplification of the local analysis. In particular, we obtain a new analytic proof of the Morse-Bott inequalities on a closed manifold (joint work with V. Silantyev). (Received August 31, 2004)