Novikov, S. P.; Shubin, M. A.
Morse inequalities and von Neumann $II_1$-factors. (English. Russian original) Zbl 0647.46049

It is shown that in the Morse inequalities on multiply connected manifolds instead of the classical Betti numbers, one can consider real Betti numbers equal to the von Neumann relative dimensions of the homology or cohomology groups of the local system obtained from representation of the fundamental group in a $II_1$-factor.

In § 1 the authors formulate the basic theorem, in § 2 they sketch the proof. The examples are considered in § 3. These examples show, in particular, that this inequality is better than the classical one. In the addendum Morse-type inequalities for vector fields are considered.

Reviewer: V. Golodets

MSC:

46L35 Classifications of $C^*$-algebras
46M20 Methods of algebraic topology in functional analysis (cohomology, sheaf and bundle theory, etc.)
57N65 Algebraic topology of manifolds

Cited in 3 Reviews
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Morse inequalities on multiply connected manifolds; Betti numbers; von Neumann relative dimensions of the homology or cohomology groups of the local system; vector fields