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Section:

5. Differential Geometry and Global Analysis

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Equivariant η-invariants and η-forms
The η-invariant of a first order linear elliptic selfadjoint differential operator D is a spectral invariant of D. It appears as a boundary correction term in the Atiyah-Patodi-Singer index theorem for manifolds with boundary. Natural generalizations are equivariant η-invariants and η-forms, which appear in generalizations of the equivariant index theorem and the index theorem for families, respectively.
We show that the η-forms of families with compact structure group G, induced by a G-equivariant operator D of Dirac type on the typical fibre M, and the G-equivariant η-invariant of D on M are related by a term that is locally computable on M. This result can be applied to compute η-invariants of Dirac operators on homogeneous spaces.