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A generalized MIT Bag operator on spin manifolds in the non-relativistic limit. (English) J. Geom. Phys. 178, Article ID 104534, 35 p. (2022)

Summary: We consider Dirac-like operators with piecewise constant mass terms on spin manifolds, and we study the behaviour of their spectra when the mass parameters become large. In several asymptotic regimes, effective operators appear: the extrinsic Dirac operator and a generalized MIT Bag Dirac operator. This extends some results previously known for the Euclidean spaces to the case of general spin manifolds.

MSC:
- 57R15 Specialized structures on manifolds (spin manifolds, framed manifolds, etc.)
- 53C27 Spin and Spin^c geometry
- 15A66 Clifford algebras, spinors
- 53B20 Local Riemannian geometry

Keywords:
- Dirac operator; spin manifolds; MIT Bag model; eigenvalue asymptotics; effective operator

Full Text: DOI

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