

## Abstract

### The cubic Dirac operator on compact quotients of the oscillator group

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We determine the spectrum of Kostant's cubic Dirac operator  $D^{1/3}$  on locally symmetric Lorentzian manifolds of the form  $\Gamma \backslash \text{Osc}_1$ , where  $\text{Osc}_1$  is the four-dimensional oscillator group and  $\Gamma \subset \text{Osc}_1$  is a (cocompact) lattice. Moreover, we give an explicit decomposition of the regular representation of  $\text{Osc}_1$  on  $L^2$ -sections of the spinor bundle into irreducible subrepresentations and we determine the eigenspaces of  $D^{1/3}$ .