Some remarks on the Dirac operator on symmetric spaces

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Abstract

We develop the spectral analysis for the Dirac operator on symmetric spaces of noncompact type based on harmonic analysis on Lie groups. In harmonic analysis on Lie groups, the Dirac operator have been deeply studied to characterize discrete series representations of Lie groups. In this talk, we compute the continuous spectrum of the Dirac operator on irreducible symmetric spaces of noncompact type. We show that the continuous spectrum has a spectral gap if and only if the symmetric space is isomorphic to a coset space of the special pseudo-unitary group of odd matrix size. Furthermore, we give a uniform weighted resolvent estimate for the Dirac operator under a certain assumption on the symmetric space.