

# Scalar curvature and spectrum of the Laplacian

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## Abstract

For a Riemannian closed (compact, without boundary) spin manifold  $(M, g)$  and under some topological obstruction to the existence of a metric with positive scalar curvature (non-zero  $\hat{A}$ -genus or enlargability in the sense of Gromov–Lawson), we give an optimal upper bound for the infimum of the scalar curvature in terms of the bottom of the spectrum of the Laplacian on the universal covering  $\tilde{M}$ . More precisely:

$$\inf_{p \in M} \text{scal}^{(M, g)}(p) \leq -4 \frac{n}{n-1} \lambda_0(\tilde{M}, \tilde{g}).$$