Topics in Geometric Analysis



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A sharp spectral splitting theorem

Monday, 23 June 2025 12:00 (1 hour)

We present a splitting theorem for Riemannian manifolds that satisfy a spectral lower bound on the Ricci curvature. More precisely, given a Riemannian manifold with two ends, consider a Schrodinger operator whose potential is pointwise equal to the least eigenvalue of the Ricci tensor; we prove that if the spectrum of such operator is nonnegative, then the manifold has nonnegative Ricci in the pointwise classical sense and it splits isometrically. We will also discuss the sharpness of the assumptions. The result provides a sharp spectral generalization of the celebrated Cheeger-Gromoll splitting theorem in the case of multiple ends. The talk is based on a joint work in collaboration with Gioacchino Antonelli (New York University) and Kai Xu (Duke University).

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