THU/P3
17:00–17:20

On conformally covariant powers of the Laplacian

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On any Riemannian manifold, the conformally covariant conformal Laplacian (or Yamabe operator) arises by correcting the Laplacian by a suitable multiple of the scalar curvature. Similarly, correcting the square of the Laplacian by a second order operator which involves the Ricci tensor and the scalar curvature, yields the conformally covariant Paneitz operator. Both operators play a central role in conformal differential geometry and geometric analysis. Higher order generalizations of these operators were constructed in [1] by using the Fefferman-Graham ambient metric. The structure of these operators is extremely complex. In the lecture we discuss recursive relations among the conformally covariant powers of Laplacian. As examples, we present formulas for the conformally covariant third and fourth power. Full details are given in [2] and [3].

[1] R. GRAHAM, R. JENNE, L. MASON AND G. SPARLING: Conformally invariant powers of the Laplacian. I. Existence, J. London Math. Soc. (2) **46**, (1992), 557–565.

[2] A. JUHL: *Families of Conformally Covariant Differential Operators*, *Q-Curvature and Holography*. Progress in Mathematics, vol. 275, Birkhäuser 2009.

[3] A. JUHL: On conformally covariant powers of the Laplacian. *arXiv:0905.3992.*