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Conformal harmonics, Branson–Gover operators and harmonic forms on Poincaré-Einstein manifolds

Tom Branson and Rod Gover constructed new conformally invariant differential operators acting on k-forms on a conformal compact manifold $(M, [h])$, and a generalization Q_k of Branson Q-curvature for k-forms. The kernel of some of these operators is what they call conformal harmonics.

We show how they are related to harmonic forms on Poincaré–Einstein manifolds with $(M, [h])$ as conformal infinity. In particular, conformal harmonics can be identified with harmonic forms on the bulk with a strong regularity at the boundary, spanning a finite dimensional set.

Joint work with E. Aubry.