

HEAT KERNEL EXPANSIONS, AMBIENT METRICS AND GLOBAL CONFORMAL INVARIANTS

ANDREAS JUHL

The spectral theory of the conformal Laplacian on compact manifolds gives rise to interesting global variational functionals: the coefficients of the small time expansion of the restriction to the diagonal of its heat kernel, the value at $s = 0$ of its zeta function and its determinant. In these talks, we describe new links between the spectral theory of the conformal Laplacian and conformal invariants. We show that the Fefferman-Graham ambient metric leads to high-order perturbations of the conformal Laplacian with interesting conformal properties. In particular, we use spectral theory to derive the conformal transformation properties of renormalized volume coefficients and use heat kernel coefficients to construct new conformal variational functionals. The proofs rest on the recursive structure of GJMS-operators. Moreover, we indicate some further new developments around this and formulate some open problems.