1000-53-111 **William J Ugalde*** (`ugalde@math.purdue.edu`), Purdue University, Department of Mathematics, 150 N. University St., West Lafayette, IN 47907-1395. *Noncommutative residue and conformal invariants.*

For an even dimensional, compact, conformal manifold M without boundary we use the noncommutative residue to construct conformal invariants. The first one is a symmetric, bilinear, differential functional B_n acting on $C^\infty(M)$. The second one is a differential operator P_n like the critical GJMS operator. The main relation is:

$$\mathrm{Wres}([2\mathcal{D} - 1, f][2\mathcal{D} - 1, h]) = \int_M B_n(f, h)\, dx = \int_M f P_n(h)\, dx.$$

with Wres the noncommutative residue and $\mathcal{D}$, acting on the square integrable sections of middle dimension forms of M, is the orthogonal projection on the space of exact forms. (Received August 20, 2004)