1035-20-257   **Daniela Mihai*** (`dmihai@andrew.cmu.edu`), Dept. of Mathematical Sciences, Wean Hall 6113, Carnegie Mellon University, Pittsburgh, PA 15213. *Null Decomposition of Conformal Algebras.*

The study of symmetry groups has shown that invariants are of great interest in many areas in mathematics and physics. Here we are interested in particular in the symmetry groups SO(p,q) and their associated algebras. The conformal algebra of an n-dimensional affine space with a metric of arbitrary signature (p, q) with p + q = n is considered. The case of broken conformal invariance is studied, by considering the subalgebra of the enveloping algebra of the conformal algebra that commutes with the squared-mass operator. This algebra, denoted R, is generated by the generators of the Poincar Lie algebra and an additional vector operator R which preserves the relevant information when the conformal invariance is broken. Due to the nonlinearity of the algebra, finding the Casimir invariants becomes extremely difficult. The R-algebra is constructed for arbitrary dimensions, but the Casimir invariants are only determined for n $\leq$ 5. (Received August 26, 2007)