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Bojko Bakalov* (bojko_bakalov@ncsu.edu) and **Alberto De Sole**
(desole@math.harvard.edu). *Non-linear Lie conformal algebras with three generators.*

The notion of a Lie conformal algebra encodes the commutators of quantum fields in a vertex algebra. Starting from a Lie conformal algebra one can construct a vertex algebra such that the commutators of generating fields are linear combinations of the same fields and their derivatives. The notion of a non-linear Lie conformal algebra captures the general case when the commutators of generating fields involve not only linear combinations but (normally-ordered) products. We classify certain non-linear Lie conformal algebras with three generators, which can be viewed as deformations of the affine Lie algebra $\widehat{\mathfrak{sl}}(2)$. We construct free-field realizations of our algebras extending the Wakimoto realization of $\widehat{\mathfrak{sl}}(2)$ at the critical level -2 . (Received December 31, 2006)