On the classification of commutative right-nilalgebras of dimension at most four

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Gerstenhaber and Myung (1975) classified all commutative, power-associative nilalgebras of dimension 4. In this article we extend Gerstenhaber and Myung's results by giving a classification of commutative right-nilalgebras of right-nilindex four and dimension at most four, without assuming power-associativity. For quadratically closed fields there is, up to isomorphism, a unique such algebra which is not power-associative in dimension 3, and 7 in dimension 4.