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ON MATRIX REPRESENTATIONS OF GEOMETRIC (CLIFFORD) ALGEBRAS

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Abstract. Representations of geometric (Clifford) algebras with real square matrices are reviewed by providing the general theorem as well as examples of lowest dimensions. New definitions for isometry and norm are proposed. Direct and indirect isometries are identified respectively with automorphisms and antiautomorphisms of the geometric algebra, while the norm of every element is defined as the n^{th}-root of the absolute value of the determinant of its matrix representation of order n. It is deduced in which geometric algebras direct isometries are inner automorphisms (similarity transformations of matrices). Indirect isometries need reversion too. Finally, the most common isometries are reviewed in order to write them in this way.

MSC: 15A66, 16G30
Keywords: Clifford algebra, geometric algebra, isometries, matrix representation

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