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Mathematics > Rings and Algebras

An algorithm for the Cartan-Dieudonné theorem on generalized scalar product spaces

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We present an algorithmic proof of the Cartan-Dieudonn\'e theorem on generalized real scalar product spaces with arbitrary signature. We use Clifford algebras to compute the factorization of a given orthogonal transformation as a product of reflections with respect to hyperplanes. The relationship with the Cartan-Dieudonn\'e-Scherk theorem is also discussed in relation to the minimum number of reflections required to decompose a given orthogonal transformation.

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