Mathematics > Rings and Algebras

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

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(Submitted on 3 Nov 2010)

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.

Comments:	25 pages
Subjects:	**Rings and Algebras (math.RA)**
MSC classes:	15A23, 15A30, 15A66
Cite as:	**arXiv:1011.1027v1 [math.RA]**

Submission history

From: Jose-Luis Aragon [view email]
[v1] Wed, 3 Nov 2010 22:27:25 GMT (19kb)

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