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Spheres with more than 7 vector fields: all the fault of Spin(9)

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(Submitted on 3 Jul 2011 (v1), last revised 29 Apr 2012 (this version, v2))

We give an interpretation of the maximal number of linearly independent vector fields on spheres in terms of the Spin(9) representation on R^16. This casts an insight on the role of Spin(9) as a subgroup of SO(16) on the existence of vector fields on spheres, parallel to the one played by complex, quaternionic and octonionic structures on R^2, R^4 and R^8, respectively.

Comments:	14 pages. Revised version. The proof of the main theorem, now without induction, is in the completely new Section 6. Notations have been simplified in all the paper
Subjects:	**Differential Geometry (math.DG)**; Rings and Algebras (math.RA)
MSC classes:	15B33, 53C27, 57R25
Cite as:	**arXiv:1107.0462** [math.DG]
	(or **arXiv:1107.0462v2** [math.DG] for this version)

Submission history

From: Maurizio Parton [view email]
[v1] Sun, 3 Jul 2011 14:06:39 GMT (20kb,D)
[v2] Sun, 29 Apr 2012 15:40:25 GMT (26kb,D)

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