Cornell University Library

We gratefully acknowledge support from the Simons Foundation and member institutions

arXiv.org > math > arXiv:1107.1522

Search or Article-id

(Help | Advanced search)

All papers   Go!

Mathematics > Algebraic Geometry

Pfaffian quartic surfaces and representations of Clifford algebras

Emre Coskun, Rajesh S. Kulkarni, Yusuf Mustopa

(Submitted on 7 Jul 2011)

Given a nondegenerate ternary form $f=f(x_1,x_2,x_3)$ of degree 4 over an algebraically closed field of characteristic zero, we use the geometry of K3 surfaces and van den Bergh's correspondence between representations of the generalized Clifford algebra C_f associated to f and Ulrich bundles on the surface $X_f:=\{w^{4}=f(x_1,x_2,x_3)\} \subseteq \mathbb{P}^3$ to construct a positive-dimensional family of irreducible representations of $C_f.$

The main part of our construction, which is of independent interest, uses recent work of Aprodu-Farkas on Green's Conjecture together with a result of Basili on complete intersection curves in $\mathbb{P}^{3}$ to produce simple Ulrich bundles of rank 2 on a smooth quartic surface $X \subseteq \mathbb{P}^3$ with determinant $\mathcal{O}_X(3).$ This implies that every smooth quartic surface in $\mathbb{P}^3$ is the zerolocus of a linear Pfaffian, strengthening a result of Beauville-Schreyer on general quartic surfaces.

Comments:	This paper contains a proof of the main result claimed in the erroneous preprint arXiv:1103.0529. We also extend this result to all smooth quartic surfaces
Subjects:	**Algebraic Geometry (math.AG)**; Rings and Algebras (math.RA)
MSC classes:	14J60, 14J28, 16G50
Cite as:	**arXiv:1107.1522 [math.AG]**
	(or **arXiv:1107.1522v1 [math.AG]** for this version)

Submission history

From: Rajesh Kulkarni [view email]

[v1] Thu, 7 Jul 2011 21:16:29 GMT (25kb)

Which authors of this paper are endorsers?