ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)
ARS MATHEMATICA CONTEMPORANEA 21 (2021) #P1.04
https://doi.org/10.26493/1855-3974.2358.3c9
(Also available at http://amc-journal.eu)

On Hermitian varieties in $\mathrm{PG}(6, q^2)$

Angela Aguglia *

Dipartimento di Meccanica, Matematica e Management, Politecnico di Bari, Via Orabona 4, I-70125 Bari, Italy

Luca Giuzzi †

DICATAM, University of Brescia, Via Branze 53, I-25123 Brescia, Italy

Masaaki Homma

Department of Mathematics and Physics, Kanagawa University, Hiratsuka 259-1293, Japan

Received 8 June 2020, accepted 15 February 2021, published online 10 August 2021

Abstract

In this paper we characterize the non-singular Hermitian variety $\mathcal{H}(6, q^2)$ of $\mathrm{PG}(6, q^2)$, $q \neq 2$ among the irreducible hypersurfaces of degree $q+1$ in $\mathrm{PG}(6, q^2)$ not containing solids by the number of its points and the existence of a solid S meeting it in $q^4 + q^2 + 1$ points.

Keywords: Unital, Hermitian variety, algebraic hypersurface.

Math. Subj. Class.: 51E21, 51E15, 51E20

*Corresponding author. The author was supported by the Italian National Group for Algebraic and Geometric Structures and their Applications (GNSAGA - INdAM).

†The author was supported by the Italian National Group for Algebraic and Geometric Structures and their Applications (GNSAGA - INdAM).

E-mail addresses: angela.aguglia@poliba.it (Angela Aguglia), luca.giuzzi@unibs.it (Luca Giuzzi), homma@kanagawa-u.ac.jp (Masaaki Homma)

ARS MATHEMATICA CONTEMPORANEA

ISSN 1855-3966 (tiskana izd.), ISSN 1855-3974 (elektronska izd.)
ARS MATHEMATICA CONTEMPORANEA 21 (2021) #P1.04
https://doi.org/10.26493/1855-3974.2358.3c9
(Dostopno tudi na http://amc-journal.eu)

O hermitskih raznoterostih v $\mathrm{PG}(6, q^2)$

Angela Aguglia *

Dipartimento di Meccanica, Matematica e Management, Politecnico di Bari, Via Orabona 4, I-70125 Bari, Italy

Luca Giuzzi †

DICATAM, University of Brescia, Via Branze 53, I-25123 Brescia, Italy

Masaaki Homma

Department of Mathematics and Physics, Kanagawa University, Hiratsuka 259-1293, Japan

Prejeto 8. junija 2020, sprejeto 15. februarja 2021, objavljeno na spletu 10. avgusta 2021

Povzetek

V tem članku karakteriziramo nesingularno hermitsko raznoterost $\mathcal{H}(6, q^2)$, ki pripada $\mathrm{PG}(6, q^2)$, $q \neq 2$, v množici vseh ireducibilnih hiperploskev stopnje $q + 1$ v $\mathrm{PG}(6, q^2)$ brez teles, s številom njenih točk in z eksistenco telesa S, s katerim si deli $q^4 + q^2 + 1$ točk.

Ključne besede: Unitalen, hermitska raznoterost, algebraična hiperploskev.

Math. Subj. Class.: 51E21, 51E15, 51E20

*Kontaktni avtor. Avtor je bil podprt s strani Italian National Group for Algebraic and Geometric Structures and their Applications (GNSAGA - INdAM).

†Avtor je bil podprt s strani Italian National Group for Algebraic and Geometric Structures and their Applications (GNSAGA - INdAM).

E-poštni naslovi: angela.aguglia@poliba.it (Angela Aguglia), luca.giuzzi@unibs.it (Luca Giuzzi), homma@kanagawa-u.ac.jp (Masaaki Homma)