



The sizes of the intersection of two unital in $PG(2, q^2)$

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(Submitted on 9 Jul 2011)

We show that the size of the intersection of a Hermitian variety in $PG(n, q^2)$, and any set satisfying an r -dimensional-subspace intersection property, is congruent to 1 modulo a power of p . In particular, in the case where $n=2$, if the two sets are a Hermitian unital and any other unital, the size of the intersection is congruent to 1 modulo \sqrt{q} or modulo \sqrt{pq} . If the second unital is a Buekenhout-Metz unital, we show that the size is congruent to 1 modulo q .

Subjects: **Combinatorics (math.CO)**

Cite as: **arXiv:1107.1820 [math.CO]**

(or **arXiv:1107.1820v1 [math.CO]** for this version)

Submission history

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[v1] Sat, 9 Jul 2011 21:48:40 GMT (13kb)

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