

Meeting: 1005, Newark, Delaware, SS 5A, Special Session on Designs, Codes, and Geometries

1005-05-95 **David B. Chandler*** (chandler@math.udel.edu), Institute of Mathematics, Academia Sinica, Nankang, 11529 Taipei, Taiwan. *On the intersection sizes of Hermitian unitals with other unitals in $\text{PG}(2, q^2)$, and of Hermitian varieties with certain other sets in $\text{PG}(n, q^2)$.*

Around 1990, R. Baker and G. Ebert conjectured that the size of the intersection of a Hermitian unital with any other unital in $\text{PG}(2, q^2)$ is congruent to 1 (mod q). A. Blokhuis, A. Brouwer, and H. Wilbrink proved that it is congruent to 1 (mod p). We show that the intersection size of a Hermitian unital with a Buekenhout-Metz unital is indeed congruent to 1 (mod q), and for a Hermitian unital with any other unital it is at least congruent to 1 (mod \sqrt{q}) or (mod \sqrt{pq}). We get results similar to the second case for Hermitian varieties and certain other sets in higher dimensions. (Received February 01, 2005)