

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

1005-05-100 **Mikhail Klin, Sven Reichard and Andrew Woldar*** (andrew.woldar@villanova.edu),
Department of Mathematical Sciences, Villanova University, Villanova, PA 19085. *Siamese
Combinatorial Objects: From 15 and 40 Points toward a More General Picture.*

New notions of Siamese objects (Siamese association schemes, Siamese color graphs, Siamese Steiner systems, etc.) were recently suggested by the authors. These objects are closely related to generalized quadrangles of order q . A first systematic investigation was arranged in the Ph.D. thesis of the second author. Here, we report on recent findings which reflect a far deeper understanding of already achieved results.

Up to isomorphism, there are exactly two Siamese color graphs on 15 points. Among the numerous such graphs on 40 points we pay special attention to one which is related to the unique embedding of generalized quadrangle $W(3)$ into projective space $PG(3, 3)$. An investigation of the similarities and differences between Siamese association schemes (and, more generally, Siamese color graphs) on small numbers of points allows us to approach a characterization of an infinite series of what we call “classical” Siamese objects. These are described in terms of unique embeddings of $W(q)$ to $PG(3, q)$. (Received February 01, 2005)