# Annals of Discrete Mathematics (18) 

General Editor: Peter L. Hammer
University of Waterloo, Ont., Canada

# Combinatorics '81 in honour of Beniamino Segre 

Proceedings of the International Conference on
Combinatorial Geometrics and their Applications
Rome, June 7-12, 1981
edited by

## A. BARLOTTI

Università di Bologna
Bologna, Italy

## P. V. CECCHERINI

Univërsità di Roma
Rome, Italy

## G. TALLINI

Università di Roma
Rome, Italy

## CONTENTS

Preface ..... v
A. BARLOTTI, Address to Participants ..... 1
G. TALLINI, Beniamino Segre ..... 5
L.M. ABATANGELO, Complete arcs in $\operatorname{PG}(2, q)$, $q$ even ..... 13
O. AMICI e B. CASCIARO, Intorno ad un teorema di Buekenhout sulle ovali pascaliane ..... 17
F. BACHMANN, Orthogonality in reflection geometry ..... 29
C. BARTOLONE, On some translation planes admitting a Frobenius group of collineations ..... 37
L. BENETEAU, Hall triple systems and related topics ..... 55
W. BENZ, On mappings preserving a single Lorentz-Minkowski- distance. I ..... 61
C. BERNASCONI, Designs obtained from affine spaces ..... 77
T. BETH and D. JUNGNICKEL, On the codes generated by certain divisible designs ..... 87
A. BICHARA and F.MAZZOCCA, On a characterization of the Grassmann spaces associated with an affine space ..... 95
A. BICHARA and G. TALLINI, On a characterization of Grassmann space representing the h-dimensional subspaces in a projective space ..... 113
R.H. BRUCK, Enriched cliques with six vertices ..... 133
A.A. BRUEN and M.J. DE RESMINI, Blocking sets in affine planes ..... 169
F. BUEKENHOUT, Some building geometries of spherical type as sets of points and lines ..... 177
K.A. BUSH, "Cyclic" solutions for finite projective planes ..... 181
A.M.COHEN, Points and lines in metasymplectic spaces ..... 193
G. COHEN and P. FRANKL, On generalized perfect codes and Steiner systems ..... 197
C.J. COLBOURN and M.J. COLBOURN, Greedy colouring of Steiner triple systems ..... 201
H. CRAPO, Concurrence geometries ..... 209
M. CRISMALE, $\left(q^{2}+q+1\right)$-sets of type $(0,1,2, q+1)$ in translation planes of order $q^{2}$ ..... 225
F. DE CLERCK and J.A. THAS, The embedding of $(0, \alpha)$-geometries in PG(n,q). Part I ..... 229
M. DE FINIS and M.J. DE RESMINI, On cubic surfaces over a field of characteristic 3 ..... 241
A. DELANDTSHEER, Some characterizations of finite 3-dimensional projective spaces and affino-projective planes ..... 279
J. DÉNES, Ön a problem of A. Kotzig ..... 283
R.H.F. DENNISTON, A small 4-design ..... 291
M. DEZA, Some new generalizations of sharply t -transitive groups and sets ..... 295
J. DOYEN and M. LANDUYT, Dissections of polygons ..... 315
A. DRÁPAL and T. KEPKA, Group modifications of some partial groupoids ..... 319
E.W. ELLERS, Bireflectionality ..... 333
G. FAINA and C. KORCHMAROS, A graphic characterization of hermitian curves ..... 335
S. FANELLI, On the connectivity of maximal planar graphs with minimum degree 5 ..... 343
R. FUJI-HARA and S.A. VANSTONE, Affine geometries obtained from projective planes and skew resolutions on $\operatorname{AG}(3, q)$ ..... 355
D. GHINELLI SMIT, Automorphisms and generalized incidence matrices of divisible designs ..... 377
M. GIONFRIDDO, Some results on partial Steiner quadruple systems ..... 401
M.J. GRANNELL and T.S. GRIGGS, Some recent results on cylic Steiner quadruple systems - A survey ..... 409
L. GUERRA and E. UGHI, On a conjecture of S. Ilkka ..... 419
C. HERING, On homologies of fixed-point-free affine groups ..... 427
R. HILL, On Pellegrino's 20 -caps in $\mathrm{S}_{4,3}$ ..... 433
J.W.P. HIRSCHFELD, Caps in elliptic quadrics ..... 449
H. HOTJE, On Cohnfunctions ..... 467
X. HUBAUT and R.METZ, A class of strongly regular graphs related to orthogonal groups ..... 469
D. HUGHES, On the non-existence of a semi-symmetric 3-design with 78 points ..... 473
T. IHRINGER, On certain linear congruence class geometries ..... 481
N.L. JOHNSON, Translation planes of characteristic p that admit SL(2, $\left.{ }^{\mathrm{r}}\right)$ ..... 493
W.M. KANTOR, Nondesarguesian planes, partial geometries, strongly regular graphs and codes arising from hyperbolic quadrics ..... 511
H. KARZEL and M. MARCHI, The projectivity groups of ovals and of quadratic sets ..... 519
A.D. KEEDWELL, On $R$-sequenceability and $R_{h}$-sequenceability of groups ..... 535
H.J. KROLL, On the characterization of finite Miquelin Möbius planes ..... 549
C. LEFE'VRE-PERCSY, Copolar spaces fully embedded in projective spaces ..... 553
J.A. LESTER, A physical characterization of conformal transformations of Minkowski spacetime ..... 567
J.H. VAN LINT, The van der Waerden Conjecture ..... 575
A. MACHI and P. PIZZI, Some extremal results about the genus of a pair of permutations ..... 581
M. MARCHI and S. PIANTA, Partial parallelism spaces and slit spaces ..... 591
M. MARCHI and E. ZIZIOLI, On a class of kinematic spaces ..... 601
H.F. MATTSON Jr. and J.R. SCHATZ, A brief survey of covering radius ..... 617
F.MAZZOCCA and D. OLANDA, A graphic characterization of the lines of an affine space ..... 625
W. MIELANTS and H. LEEMANS, $\mathrm{Z}_{2}$-cohomology of projective spaces of odd order ..... 635
A. NEUMAIER and K.E. WOLFF, Inequalities for point stable designs ..... 653
S.E. PAYNE, On the structure of translation generalized quadrangles ..... 661
G. PELLEGRINO, Sur les k-arcs complets des planes de Galois d'ordre impair ..... 667
N. PERCSY, The bundles axiom and egglike subsets of projective spaces ..... 695
A. ROSA and S.A. VANSTONE, Kirkman cubes ..... 699
L.A. ROSATI, Sulle ovali dei piani desarguesiani finiti d'ordine pari ..... 713
J. SAXL, Groups on points and sets ..... 721
E. STRICKLAND, An application of combinatorics of Young tableaux to geometric problems ..... 725
M. TALLINI SCAFATI, Two characters $k$-sets with respect to a singular space in $P G(r, q)$ ..... 731
J.A. THAS and S.E. PAYNE, Moufang conditions for finite generalized quadrangles ..... 745
M.J. THOMSEN, Nilinearly generated near-algebras ..... 753
K. VEDDER, Affine planes and latin squares ..... 761
A.G.S. VENTRE, Composition of rotations of graphs ..... 769
R. VINCENTI, A survey on varieties of $P G(4, q)$ and Baer subplanes of translation planes ..... 775
A.I. WEISS, On trivalent graphs embedded in twisted honeycombs ..... 781
M.L.H. WILLEMS, Restricted Mi-spaces, restricted Li-spaces, optimal codes and $n$-arcs ..... 789
G. ZAPPA, Sur des classes de groupes finis résolubles ..... 803
H. ZEITLER, Finite non-euclidean planes ..... 805
Other talks ..... 819
List of participants ..... 821

