

THE APRIL MEETING IN CHICAGO

The three hundred sixty-eighth meeting of the American Mathematical Society was held at the University of Chicago on Friday and Saturday, April 12–13, 1940. Two hundred twelve persons registered including the following one hundred eighty-one members of the Society:

A. A. Albert, G. E. Albert, P. H. Anderson, T. W. Anderson, Max Astrachan, J. V. Atanasoff, W. L. Ayres, Reinhold Baer, R. H. Bardell, R. W. Barnard, R. C. F. Bartels, R. A. Beaumont, J. H. Bell, H. R. Beveridge, S. F. Bibb, G. A. Bliss, Morris Bloom, Henry Blumberg, L. M. Blumenthal, F. L. Brooks, R. S. Burington, H. E. Burns, L. E. Bush, W. H. Bussey, J. W. Calkin, C. C. Camp, H. H. Campaigne, T. E. Caywood, E. W. Chittenden, R. V. Churchill, M. D. Clement, R. H. Cole, B. H. Colvin, Max Coral, J. J. Corliss, E. L. Crow, D. R. Curtiss, J. E. Davis, W. M. Davis, A. H. Diamond, J. M. Dobbie, J. L. Doob, D. M. Dribin, R. J. Duffin, Ben Dushnik, J. J. Eachus, Samuel Eilenberg, W. S. Erickson, E. B. Escott, H. P. Evans, H. S. Everett, L. R. Ford, Bernard Friedman, D. G. Fulton, H. L. Garabedian, E. R. Garbe, R. E. Gaskell, B. H. Gere, F. J. Gerst, B. C. Getchell, H. A. Giddings, E. L. Godfrey, H. H. Goldstine, G. D. Gore, Cornelius Gouwens, L. M. Graves, J. W. Green, L. W. Griffiths, V. G. Grove, O. H. Hamilton, P. C. Hammer, M. L. Hartung, G. E. Hay, K. E. Hazard, O. C. Hazlett, A. E. Heins, E. D. Hellinger, M. R. Hestenes, J. F. Heyda, T. H. Hildebrandt, J. J. L. Hinrichsen, D. L. Holl, A. S. Householder, D. H. Hyers, M. H. Ingraham, S. B. Jackson, Fritz John, Chosaburo Kato, J. F. Kenney, W. C. Krathwohl, A. C. Ladner, R. E. Langer, Lincoln LaPaz, D. H. Leavens, R. A. Leibler, J. H. Levin, P. E. Lewis, A. O. Lindstrum, M. I. Logsdon, A. T. Lonseth, W. C. McDaniel, C. C. MacDuffee, H. M. MacNeille, Morris Marden, J. R. Mayor, Karl Menger, H. L. Meyer, A. N. Milgram, D. D. Miller, W. E. Milne, W. L. Mitchell, M. G. Moore, R. L. Moore, C. W. Moran, E. J. Moulton, A. L. Nelson, H. E. Newell, K. L. Nielsen, I. M. Niven, E. A. Nordhaus, M. A. Norval, E. N. Oberg, J. W. Odle, Rufus Oldenburger, E. W. Paxson, J. F. Paydon, E. R. Peck, G. H. Peebles, I. E. Perlin, Sam Perlis, G. B. Price, Tibor Radó, E. D. Rainville, R. B. Rasmusen, W. T. Reid, C. E. Rickart, R. F. Rinehart, W. E. Roth, E. H. Rothe, M. A. Sadowsky, R. G. Sanger, W. T. Scott, C. E. Sealander, M. E. Shanks, C. G. Shover, H. A. Simmons, M. M. Slotnick, F. C. Smith, G. G. Speaker, D. W. Starr, N. E. Steenrod, B. M. Stewart, H. P. Thielman, R. M. Thrall, Gerhard Tintner, L. W. Tordella, Leonard Tornheim, H. C. Trimble, W. J. Trjitzinsky, P. L. Trump, J. W. Tukey, V. J. Varino, J. I. Vass, H. E. Vaughan, H. S. Wall, Henry Wallman, T. O. Walton, L. E. Ward, K. W. Wegner, M. J. Weiss, C. P. Wells, M. E. Wescott, G. W. Whaples, G. W. Whitehead, L. R. Wilcox, K. P. Williams, L. A. Wolf, M. C. Wolf, Y. K. Wong, F. E. Wood, J. W. T. Youngs.

On Friday morning the meeting was held in three sections, Analysis, Professor R. E. Langer presiding; Geometry and Algebra, Professor Reinhold Baer presiding; and Topology and the Theory of Sets, Professor N. E. Steenrod presiding. On Friday afternoon Professor W. J. Trjitzinsky gave the Symposium Lecture entitled *General the-*

ory of functions of a complex variable. Professor E. W. Chittenden presided at this lecture. On Saturday morning there were two sections, Analysis with Professor W. T. Reid presiding and Algebra with Professor C. C. MacDuffee presiding.

All sessions were held in Eckhart Hall and the adjoining Ryerson Laboratory.

On Friday afternoon a tea was given by the ladies of the Department of Mathematics of the University of Chicago in the Commons Room of Eckhart Hall.

On Friday evening a dinner was held at Burton Court for members and guests with an attendance of one hundred sixty-eight. Professor H. S. Everett of the University of Chicago acted as toastmaster, and brief talks were given by Professors W. H. Bussey, Marie J. Weiss, G. B. Price, L. R. Ford, and R. L. Moore.

Titles and cross references to the abstracts of the papers read at this meeting follow below. Papers numbered 1 to 9 were read before the Analysis section Friday morning, papers 10 to 16 before the section for Geometry and Algebra, papers 17 to 24 before the section for Topology and the Theory of Sets, papers 25 to 32 before the Analysis section Saturday morning, and papers 33 to 39 before the Algebra section Saturday morning. Papers 40 to 61, whose abstract numbers are followed by the letter *t*, were read by title. Mr. F. P. Jenks and Mr. J. C. Abbott were introduced by Professor Karl Menger, Dr. W. S. Snyder by Professor Tibor Radó, Mr. H. J. Miser by Professor L. R. Ford, and Mr. Roy Dubisch by Professor A. A. Albert. Paper number 2 was read by Dr. Duffin, 3 by Dr. Bartels, 4 by Dr. Leibler, 18 by Professor Dushnik, 29 by Dr. Reichelderfer, and 37 by Mr. Porges.

1. R. E. Gaskell: *A problem in heat conduction and an expansion theorem.* (Abstract 46-5-271.)

2. R. J. Duffin and J. J. Eachus: *The converse of a closure theorem of Paley and Wiener.* (Abstract 46-5-265.)

3. R. C. F. Bartels and R. V. Churchill: *An extension of Duhamel's theorem.* (Abstract 46-5-230.)

4. J. L. Doob and R. A. Leibler: *On the spectral analysis of a certain transformation.* Preliminary report. (Abstract 46-5-261.)

5. Fritz John: *The Dirichlet problem for a hyperbolic equation.* (Abstract 46-5-284.)

6. R. V. Churchill: *Termwise integration of Sturm-Liouville expansions.* Preliminary report. (Abstract 46-5-247.)

7. A. E. Heins: *On the solution of partial difference equations: symmetric boundary conditions.* (Abstract 46-5-277.)

8. K. L. Nielsen: *Concerning general boundary value problems for linear differential equations*. Preliminary report. (Abstract 46-5-307.)
9. Gerhard Tintner: *Fourier integrals as Bessel differential operators*. Preliminary report. (Abstract 46-5-333.)
10. F. P. Jenks: *Order and parallelism in the non-euclidean geometry of joining and intersecting*. (Abstract 46-5-283.)
11. J. C. Abbott: *Projective theory of congruence in non-euclidean geometry*. Preliminary report. (Abstract 46-5-225.)
12. L. M. Blumenthal: *A new concept in distance geometry, with applications to spherical subsets*. (Abstract 46-7-354.)
13. Sam Perlis: *Scalar extensions of algebras with exponent equal to index*. (Abstract 46-5-315.)
14. D. M. Dribin: *The norm residue symbol for solvable algebraic number fields*. (Abstract 46-5-264.)
15. W. L. Mitchell: *Topological rings and infinite matrices*. (Abstract 46-5-302.)
16. V. J. Varino: *A note on matrices over a principal ideal ring*. (Abstract 46-5-335.)
17. E. W. Paxson: *Strictly convex metric spaces*. (Abstract 46-5-312.)
18. Ben Dushnik and E. W. Miller: *On partially ordered sets*. (Abstract 46-5-266.)
19. A. N. Milgram: *Partially ordered sets and the covering theorems of topology*. (Abstract 46-5-301.)
20. Samuel Eilenberg: *Ordered topological spaces*. (Abstract 46-5-268.)
21. G. E. Albert: *On contiguous point spaces and their applications*. (Abstract 46-3-138.)
22. D. D. Miller: *Hereditary properties of continuous transformations*. Preliminary report. (Abstract 46-5-211.)
23. J. W. T. Youngs: *On parametric representations of surfaces*. Preliminary report. (Abstract 46-5-352.)
24. R. L. Moore: *Concerning separability*. (Abstract 46-5-303.)
25. H. P. Thielman: *On the convex solution of a certain functional equation*. (Abstract 46-5-331.)
26. H. H. Goldstine: *Linear functionals and integrals in abstract spaces*. (Abstract 46-5-273.)
27. Tibor Radó: *On a lemma of McShane*. (Abstract 46-3-150.)
28. Karl Menger: *On Green's formula and the integral of derivatives*. (Abstract 46-5-210.)
29. Tibor Radó and P. V. Reichelderfer: *Note on an inequality of Steiner*. (Abstract 46-3-184.)

30. W. S. Snyder: *Functions of simple figures*. Preliminary report. (Abstract 46-5-325.)
31. J. W. Calkin: *A quotient ring over the ring of bounded operators in Hilbert space*. I. (Abstract 46-5-203.)
32. H. J. Miser: *Regions and their "patterns" in conformal mapping*. (Abstract 46-7-365.)
33. R. A. Beaumont: *Projections of non-abelian groups upon abelian groups*. Preliminary report. (Abstract 46-5-232.)
34. R. M. Thrall: *A note on a theorem by Witt*. (Abstract 46-5-332.)
35. P. E. Lewis: *Characters of abelian groups*. (Abstract 46-5-291.)
36. H. H. Campaigne: *Multiplication systems*. Preliminary report. (Abstract 46-5-242.)
37. Rufus Oldenburger and A. E. Porges: *The minimal numbers of binary forms*. (Abstract 46-5-212.)
38. Leonard Tornheim: *Linear forms in function fields*. (Abstract 46-3-196.)
39. Roy Dubisch: *Non-cyclic algebras of degree four and exponent two with pure maximal subfields*. (Abstract 46-5-206.)
40. H. L. Garabedian and H. S. Wall: *Hausdorff matrices and continued fractions*. (Abstract 46-3-171-t.)
41. G. E. Albert: *On quasi-metric spaces*. Preliminary report. (Abstract 46-3-154-t.)
42. Y. K. Wong: *On non-modular matrices*. (Abstract 46-5-224-t.)
43. Y. K. Wong: *Interchange of J -processes in bilinear forms involving non-modular matrices*. (Abstract 46-5-223-t.)
44. Gordon Pall: *On the arithmetic of quaternions*. (Abstract 46-5-215-t.)
45. J. W. Calkin: *A generalization of a theorem of Weyl*. (Abstract 46-5-204-t.)
46. J. W. Calkin: *Functions of several variables and absolute continuity*. I. (Abstract 46-5-205-t.)
47. Rufus Oldenburger: *On a class of non-negative matrices*. (Abstract 46-5-214-t.)
48. Rufus Oldenburger: *Polynomials in several variables*. (Abstract 46-5-213-t.)
49. M. S. Webster: *Maximum of certain fundamental Lagrange interpolation polynomials*. (Abstract 46-5-342-t.)
50. C. W. Vickery: *On spaces (\mathcal{E}) and Moore spaces*. (Abstract 46-5-337-t.)
51. Reinhold Baer: *Sylow theorems for infinite groups*. (Abstract 46-5-229-t.)
52. Reinhold Baer: *Nets and groups*. II. (Abstract 46-5-228-t.)

53. Karl Menger: *On shortest polygonal approximations to a curve.* (Abstract 46-5-296-t.)
54. A. N. Milgram: *On the length of continuous curves.* (Abstract 46-5-300-t.)
55. Samuel Eilenberg: *On spherical cycles.* (Abstract 46-5-267-t.)
56. W. H. Ingram: *A generalization of Erhard Schmidt's solution of the nonhomogeneous integral equation.* Preliminary report. (Abstract 46-5-282-t.)
57. I. E. Perlin: *Sufficient conditions that polynomials in several variables be positive.* (Abstract 46-5-314-t.)
58. H. H. Campaigne: *A lower limit on the number of hypergroups of a given order.* (Abstract 46-5-241-t.)
59. J. M. Feld: *Whirl-similitudes, euclidean kinematics and non-euclidean geometry.* Preliminary report. (Abstract 46-5-270-t.)
60. R. V. Churchill: *A problem in the conduction of heat.* (Abstract 46-5-246-t.)
61. R. L. Wilder: *Characterization of the lower dimensional generalized manifolds by positional properties in S_n .* (Abstract 46-5-349-t.)

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Associate Secretary