

TABLE OF CONTENTS

Preface

Table of Contents

Chapter I. METRIC SPACES WITH GEODESICS	1
§1. Metric Spaces; Notations	1
§2. The Basic Axioms	11
§3. Geodesics	17
§4. Topological Structure of One- and Two- dimensional Spaces With Axioms A - D	24
Chapter II. METRIC CONDITIONS FOR FINSLER SPACES	30
§1. Convex Surfaces and Minkowski Metrics	31
§2. Riemann Spaces and Finsler Spaces	40
§3. Condition $\Delta(P)$ and the Definition of the Local Metric	47
§4. Equivalence of the Local Metric with the Original Metric, and its Convexity	53
§5. The Minkowskian Character of the Local Metric	57
§6. The Continuity of the Local Metric	63
Chapter III. PROPERTIES OF GENERAL S. L. SPACES	72
(Spaces with a unique geodesic through any two points)	
§1. Axiom E. Shape of the Geodesics	73
§2. Two Dimensional S.L. Spaces	79
§3. The Inverse Problem for the Euclidean Plane	89
§4. Asymptotes and Limit Spheres	98
§5. Examples on Asymptotes and Limit Spheres. The Parallel Axioms	105
§6. Desarguesian Spaces	113

TABLE OF CONTENTS

Chapter IV. SPACES WITH CONVEX SPHERES.	119
§1. The Convexity Condition	120
§2. Characterization of the Higher Dimensional Elliptic Geometry	124
§3. Perpendiculars in Spaces with Spheres of Order 2	132
§4. Perpendiculars and Baselines in Open S. L. Spaces	139
§5. Definition and Properties of Limit Bisectors.	146
§6. Characterizations of the Higher Dimensional Minkowskian and Euclidean Geometries	154
§7. Plane Minkowskian Geometries	160
§8. Characterization of Absolute Geometry	168
 Chapter V. MOTIONS	 175
§1. Definition of Motions. Involutoric Motions in S. L. Spaces	176
§2. Free Movability	184
§3. Example of a Non-homogeneous Riemann Space in which Congruent Pairs of Points Can be Moved into Each Other	192
§4. Translations Along g and the Asymptotes to g	198
§5. Quasi-hyperbolic Metrics	208
§6. Translations Along Non-parallel Lines and in Closed Planes	214
§7. Plane Geometries with a Transitive Group of Motions	220
§8. Transitive Abelian Groups of Motions in Higher Dimensional Spaces	228
§9. Some Problems Regarding S. L. Spaces and Other Spaces	232
 Literature	 235