

# DIFFERENTIAL GEOMETRY

*Editors of the Volume*

W. WALISZEWSKI  
G. ANDRZEJCZAK, P. G. WALCZAK



1000053278

W A R S Z A W A 1984

## FOREWORD

The 14th Semester at the Stefan Banach International Mathematical Center (September 17–December 15, 1979) was devoted to the following groups of topics: I. Global problems of Riemannian geometry; II. Differential geometry structures and their applications in theoretical physics. Group I included, among other problems, the following ones: (1) geometry of convex surfaces, (2) isometrical imbeddings of Riemannian manifolds, (3) infinitesimal deformations of surfaces, (4) geometry of surfaces with non-positive curvature, (5) some topics of discrete geometry. Group II included, among other problems, the following ones: (1) some general geometrical problems of relativity theory, (2) applications of Finsler geometry in relativity theory, (3) methods of the theory of special Finsler spaces, (4) complex extensions of the real world, (5) global constructions of the cosmological models, (6) singular resolutions of Einstein equation, (7) problems of imbedding of pseudo-Riemannian spaces into pseudo-Euclidean ones, (8) differential geometry structures on differentiable manifolds, (9) differential geometry of homogeneous spaces and manifolds imbedded in them, (10) some generalizations of the symmetric manifolds, (11) global aspects of differential geometry.

The materials for most of the lectures delivered during the Semester have already been published elsewhere. Thus the present volume does not contain the full proceedings of the 14th Semester at the Banach Center. It contains two types of papers: (a) expository or review articles, usually containing also original contributions of the authors, (b) papers presenting original results, not published elsewhere.

*Editors of the Volume*

## CONTENTS

Foreword . . . . .	5
G. ANDRZEJCZAK, More characteristic invariants of foliated bundles . . . . .	9-22
G. ANDRZEJCZAK, Characteristic classes of foliations preserved by a transverse $k$ -field . . . . .	23-27
K. CEGIELKA, Connection on differential modules . . . . .	29-33
J. CZYŻ, On graded bundles and their geometry . . . . .	35-46
G. S. HALL, Lorentz manifolds and General Relativity Theory . . . . .	47-52
G. S. HALL, The classification of second order symmetric tensors in General Relativity Theory . . . . .	53-73
S. T. HINEVA, On infinitesimal deformations of submanifolds of a Riemannian manifold . . . . .	75-81
И. ИВАНОВА-КАРАТОПРАКЛИЕВА, Достаточные условия жесткости некоторых классов поверхностей однозначно проектирующихся на плоскость . . . . .	83-93
S. KANEMAKI, On quasi-Sasakian manifolds . . . . .	95-125
S. KOBAYASHI, Projectively invariant distances for affine and projective structures . . . . .	127-152
I. KOLÁŘ, Higher order absolute differentiation with respect to generalized connections . . . . .	153-161
A. KOWALCZYK, The Riemannian curvature tensor and differentiable spaces . . . . .	163-184
D. KRUPKA, Natural Lagrangian structures . . . . .	185-210
H. MATUSZCZYK, On exterior forms and exterior differential on a differential space of finite dimension . . . . .	211-217
Z. OLSZAK, Bochner flat Kählerian manifolds . . . . .	219-223
R. SCHIMMING, Cauchy's problem for Bach's equations of general relativity . . . . .	225-231
G. TÓTH, Toroidal Lie group actions on compact Riemannian manifolds and their relations to the fibering problem . . . . .	233-240
З. Д. УСМАНОВ, Бесконечно малые изгибания поверхностей положительной кривизны с точкой утолщения . . . . .	241-272
P. G. WALCZAK, On continuous mappings between non-negatively and non-positively curved manifolds . . . . .	273-276
W. WALISZEWSKI, Quasi-algebraic representability of sets in $R^n$ . . . . .	277-288