

# Table of contents

<b>Preface</b> . . . . .	7
<b>1 Finsler geometry on the tangent bundle of a manifold</b>	
1. Finsler spaces, generalizations and examples . . . . .	11
2. Finsler tensor calculus via the vertical vector bundle . . . . .	16
3. Vectorial Finsler connections . . . . .	21
4. Finsler connections on a manifold . . . . .	32
5. Finsler connections on Riemann–Finsler manifolds . . . . .	40
<b>2 Submanifolds of Riemann–Finsler manifolds</b>	
1. The Riemann–Finsler normal bundle and the induced Finsler connections . . . . .	45
2. Structure equations of Riemann–Finsler submanifolds . . . . .	52
3. Riemann–Finsler immersions and $H$ –Cartan connections . . . . .	60
4. Special immersions of Riemann–Finsler manifolds . . . . .	66
5. Totally geodesic Finsler subspaces . . . . .	72
<b>3 Gauge theory on the tangent bundle</b>	
1. Global gauge invariance of Lagrangians on the tangent bundle . . . . .	80
2. Local gauge invariance of Lagrangians on the tangent bundle . . . . .	87
3. Strength fields and Lagrangians for gauge fields on the tangent bundle . . . . .	90
4. Equations of motion and conservation laws . . . . .	99
5. Bianchi identities with respect to covariant derivatives of strength fields . . . . .	104
<b>4 Gauge theory on a fibre bundle</b>	
1. A tensor calculus induced by a horizontal distribution on a fibre bundle . . . . .	108
2. Global gauge invariance of Lagrangians on a fibre bundle . . . . .	117
3. Local gauge invariance of Lagrangians on a fibre bundle . . . . .	123
4. Strength fields and Lagrangians for gauge fields on a fibre bundle . . . . .	124
5. Equations of motion, conservation laws and Bianchi identities . . . . .	127
6. Gauge theory on a vector bundle . . . . .	134

<b>5</b>	<b>Multi-dimensional physical theories as gauge theories on a fibre bundle</b>	
1.	A generalization of electromagnetic field theory . . . . .	137
2.	A generalization of Yang–Mills theory . . . . .	144
<b>6</b>	<b>A new geometrical framework for a multi-dimensional relativity theory</b>	
1.	Gauge fields and strength fields for tensor densities and anti-densities on a fibre bundle . . . . .	148
2.	Ricci identities and Bianchi identities . . . . .	151
3.	Euler–Lagrange derivatives and conservation laws . . . . .	159
<b>7</b>	<b>Differential geometry of a supermanifold as a Finsler geometry</b>	
1.	Supervector spaces and supermanifolds . . . . .	166
2.	Supertensor fields on a supermanifold . . . . .	169
3.	$H$ -superconnections on a supermanifold . . . . .	175
<b>8</b>	<b>Finsler geometry and deformation of oriented media</b>	
1.	A new view of deformations of oriented media. . . . .	183
2.	Deformations of special $H$ -connections on oriented media. . . . .	187
	<b>References</b> . . . . .	191
	<b>Author index</b> . . . . .	196
	<b>Subject index</b> . . . . .	197