Advanced Topics in Geometry E1 (MTH.B505)

Inner products

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2023/04/18

Our Goal (of MTH.B505–506)

Theorem

A complete simply connected Riemannian n-manifold of constant sectional curvature k is isometric to

- *the Euclidean space $\mathbb{R}^n$ when $k = 0$,*
- *the n-dimensional sphere $S^n(k) \subset \mathbb{R}^{n+1}$ if $k > 0$, and*
- *the n-dimensional hyperbolic space $H^n(k)$ if $k < 0$.*

cf. The fundamental theorem for surface theory

Our Goal (of MTH.B505–506)

- a simply-connected Riemannian n-manifold
- complete
- sectional curvature k
- isometric
- the Euclidean space $\mathbb{R}^n$
- the sphere S^n
- the hyperbolic space H^n

Riemannian manifold

- a Riemannian n-manifold
- completeness

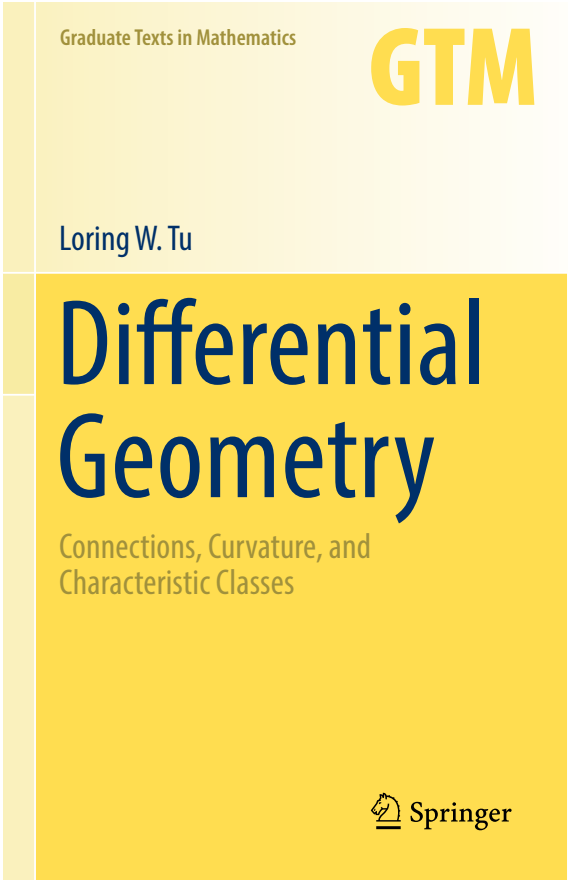
Space forms

- the Euclidean space $\mathbb{R}^n$
- the sphere S^n
- the hyperbolic space H^n

Curvature and the integrability conditions

cf. Advanced topics in Geometry F1 (MTH.B506) on 2Q.

References



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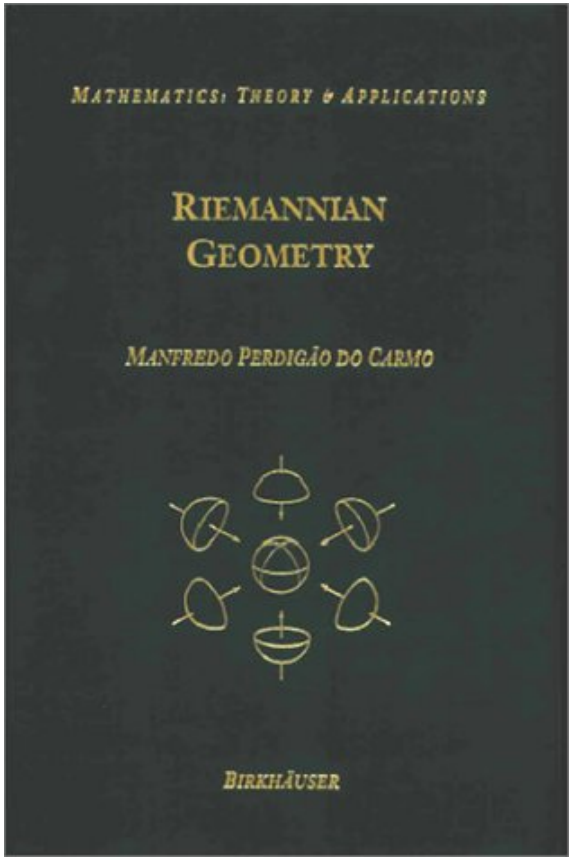

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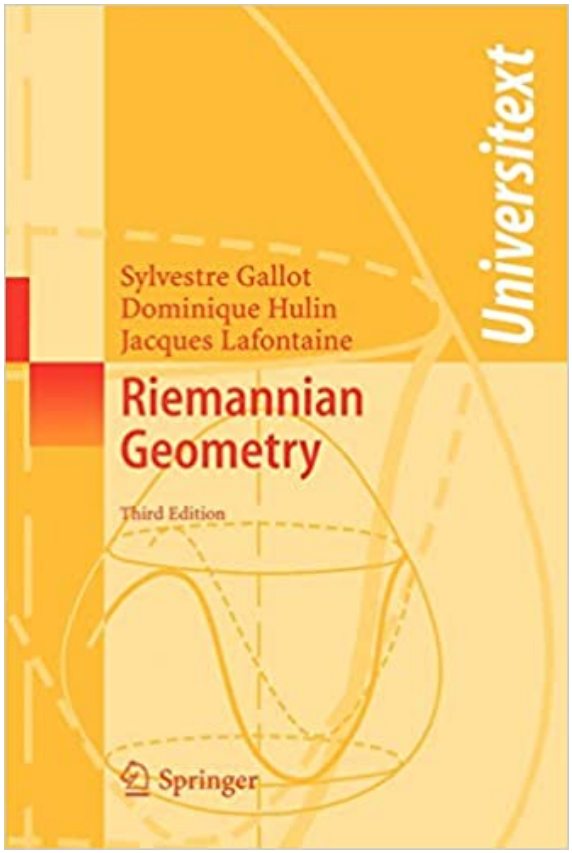

Gallot et. al.