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Info. Sheet 6; Advanced Topics in Geometry F1 (MTH.B506)

Information

- Please fill the form "Course Survey" in T2SCHOLA.

- This is the final lecture of MTH.B506. I'd like to thank all of you for participation, and apologize for cancellation and changing to online lecture.

- Homeworks are issued. The deadline is 10:00 of July 27.

Corrections

- `20230711-B-bb.pdf`, Page 6: $\omega^2 = \frac{1}{\varphi} d\theta \Rightarrow \omega^2 = \varphi \, d\theta$

- `20230711-C-bb.pdf`, Problem 5-2: The assumption "hypersurface" (added at the lecture) is not necessary.

- Lecture Note, Page 25, Remark 5.7: Grassmanian $\Rightarrow$ Grassmannian

- Lecture Note, Page 26, line 1 of Lemma 5.11: $\{\boldsymbol{e}_1, \ldots, \boldsymbol{e}_n\} \Rightarrow [\boldsymbol{e}_1, \ldots, \boldsymbol{e}_n]$

Students' comments

- $dx = \sum e_j \omega^j$ は左辺の局所表示を与え，右辺はフレームによらない．とくに右辺の接続をとった元 $\nabla(e_j \omega^h) =: T$ が M のねじれとして定義できることを思い出した.

    Lecturer's comment そうですね．部分多様体の誘導接続が torsion free であることは $dd\boldsymbol{x} = \boldsymbol{0}$ から来ますね.

Q and A

Q 1: 断面曲率を定義するとき，この講義の日程である定曲率空間の分類においては，正規直行枠をうまく取れるのでよいのですが，曲率テンソルを用いた定義で書かれた本が多い（ように思える）のは他の対象に適用したり抽象論をやったりするのに何か不便なことがあるからなのでしょうか.

A: As the integrability condition is just the curvature form, the "curvature form" formalism are used in this lecture. Of course two formulations are equivalent. Translations of the formulas between two languages are good exercise.