

# Advanced Topics in Geometry F (MTH.B502)

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`http://www.math.titech.ac.jp/~kotaro/class/2022/geom-f/`

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2022/06/14

## Important links:

- ▶ <http://www.math.titech.ac.jp/~kotaro/class/2022/geom-f>  
(official web)
- ▶ <http://www.official.kotaroy.com/class/2022/geom-f>  
(a mirror)
- ▶ <https://t2schola.titech.ac.jp/> (T2SCHOLA)

# Lecture:

- ▶ Schedule: Tuesdays 10:45–12:25
- ▶ Venue: Online lecture via zoom
- ▶ Lecturer: Kotaro Yamada (Dept. Math.);  
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# Course Description 几何理论

A local theory of Riemannian manifolds and fundamental theorem of surface theory for surface in Riemannian 3-manifolds of constant sectional curvature are introduced. As an application, a relationship of surfaces of constant mean curvature surface in different spaces, e.g. minimal surfaces in Euclidean 3-space and constant curvature one surfaces in hyperbolic space, is discussed.

- (断面曲率)
- A Riem. manifold of constant sectional curv is locally isometric to "standard" one. (integrability)
  - Surface theory for  $\begin{matrix} \text{space forms} \\ \text{3dim} \end{matrix}$
- Euclidean sp
  - Sphere
  - Hyperbolic sp
- ↑  
space forms

"Shaw codazzi equations"  $\rightarrow$  "Lawson corresp."

# Grading Policy:

- ▶ Graded by weekly homeworks.
- ▶ Each homework consists of (1) a problem on the topics in the lecture (up to 2 points), and (2) to present a question on the contents of the lecture, or to point out error(s) in the lecture note/the lecture (up to 3 points).
- ▶ Each homework should be submitted to T2SCHOLA by 10:00 on the following Thursday of the lecture, as an pdf file in the format of the homework sheet (which can be downloaded from the folder “Homework Sheet” on T2SCHOLA). Japanese is acceptable.
- ▶ Questions, requests and comments (and the answers, lecturer’s comments) will be published on the following class.