

# Student Seminar on Differential Forms in Algebraic Topology

癸卯年夏 June 2023

Fudan University

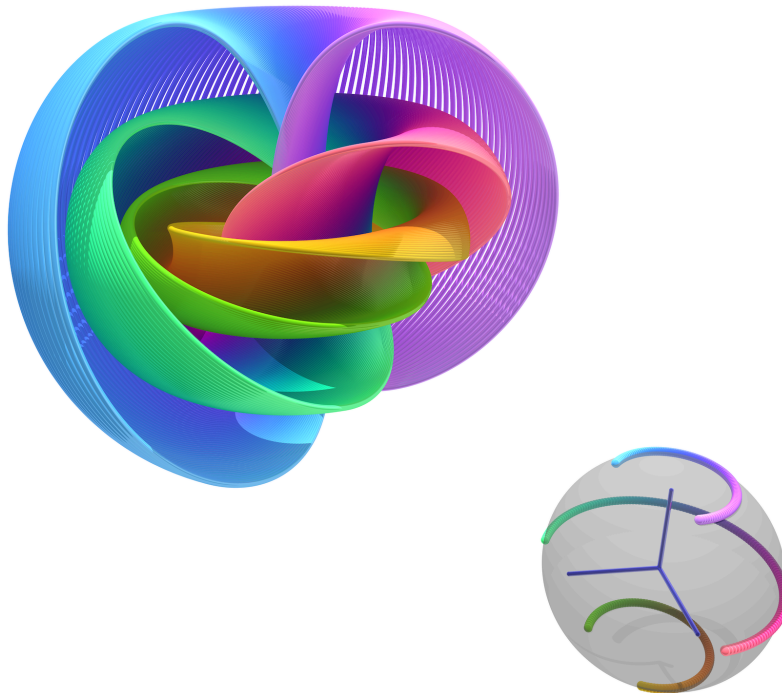
220 Handan Road, Yangpu District, Shanghai 200433, China

## 1 Topic

As the title suggests, this student seminar will focus on Differential Forms in Algebraic Topology. We will cover the theoretical contents and wishfully, we hope to glimpse into some specific examples.

## 2 Goal

Our goal is to understand algebraic topology from the perspective of differential forms. We wish to cover a series of classical constructions, results and theorems, ranging from De Rham complex, Čech cohomology, spectral sequence, and the theory of characteristic classes.



## 3 Schedule

The seminar will take the form of online discussions via Tencent Meeting during the summer break and take the form of offline (if possible) in the coming spring semester, whereas specific time arrangements are to be decided. In principle, there will be one meeting per week. Each talk should take about two and a half hours with two ten-minute breaks.

## 4 Syllabus

We will basically follow the book of Raoul Bott and Loring W. Tu. The contents listed below can all be found within it. We also recommend the speakers to look into the books in reference. Here is a plan of syllabus:

1. De Rham Theory
2. Čech Cohomology
3. The Thom Isomorphism
4. Poincare Duality
5. Spectral Sequences
6. Characteristic Classes

## 5 Reference

*Differential Forms in Algebraic Topology* By Raoul Bott and Loring W. Tu

*Differential Topology* By Morris W. Hirsch

*A User's Guide to Spectral Sequences* By John McCleary

*Characteristic Classes* By John W. Milnor And James D. Stasheff

## 6 Organizers

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Anyone who wants to join this seminar could contact one of the organizers or just scan the QR code below.



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