

Student Seminar on Homological Algebra

壬寅年冬 December 2022

Fudan University

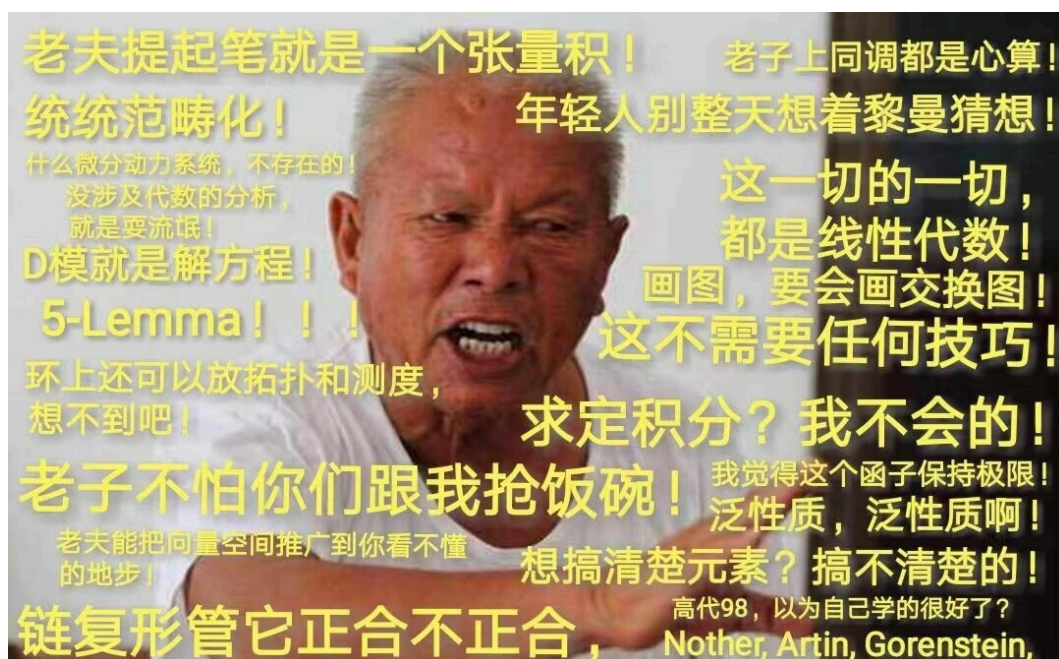
220 Handan Road, Yangpu District, Shanghai 200433, China

1 Topic

As the title suggests, this student seminar will focus on homological algebra. We will cover the theoretical contents and wishfully, we hope to glimpse into some specific examples.

2 Goal

We wish to figure out spectral sequence so that we can calculate cohomology in the head.



3 Schedule

The seminar will take the form of online discussions via Tencent Meeting during the winter 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 2 meetings per week during the break and 1 meeting per week in the spring semester. Each talk should take

about one and a half hours (with a ten-minute break) and is welcomed to last longer if the speaker wishes.

4 Syllabus

We will basically follow Weibel's book. 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. Chain Complexes
2. Derived Functors
3. Tor and Ext
4. Homological Dimension
5. Spectral Sequences
6. Group Homology and Cohomology
7. Lie Algebra Homology and Cohomology

5 Reference

An Introduction to Homological Algebra By Charles A. Weibel

Homological Algebra By Henri Cartan and Samuel Eilenberg

A User's Guide to Spectral Sequences By John McCleary

Modern Geometry—Methods and Applications Part III: Introduction to Homology Theory By B.A. Dubrovin , A.T. Fomenko , S.P. Novikov

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.

