

2019 Fall Mathematics Seminars

Homological Algebra

- ▶ Organizer: Zengrui Han
- ▶ Time & Room: TBA
- ▶ Preliminary Knowledge: Basic knowledge of category theory
- ▶ Reference: [1]
- ▶ Remark: We mainly focus on the theory of triangulated categories and derived categories (Chapter 3 and 4 in Manin's textbook)

Algebraic Geometry

- ▶ Organizer: Zengrui Han
- ▶ Time & Room: TBA
- ▶ Preliminary Knowledge: Commutative algebra, basic knowledge of sheaves and schemes
- ▶ Reference: [2]

Representation Theory of Lie algebras

- ▶ Organizer: Prof. Hongjia Chen
- ▶ Time & Room: 1(8,9), 2(11,12), 5307
- ▶ Preliminary Knowledge: Basic knowledge of Lie algebra (GTM9 section 1-13)
- ▶ Reference: [3]

Algebraic Topology

- ▶ Organizers: Jingbin Cai, Kaike Tang
- ▶ Time & Room: TBA
- ▶ Preliminary Knowledge: Topology, abstract algebra
- ▶ Reference: [4]

Differential Topology

- ▶ Organizer: Junhao Tian
- ▶ Time & Room: TBA
- ▶ Preliminary Knowledge: Definition of manifolds, tensor product and topology
- ▶ Reference: [5], [6]

Bibliography

- [1] Sergei I Gelfand and Yuri I Manin. *Methods of homological algebra*. Springer Science & Business Media, 2013.
- [2] Ravi Vakil. The rising sea: Foundations of algebraic geometry. *preprint*, 2017.
- [3] James E Humphreys. *Introduction to Lie algebras and representation theory*, volume 9. Springer Science & Business Media, 2012.
- [4] Tammo tom Dieck. *Algebraic topology*, volume 8. European Mathematical Society, 2008.
- [5] Raoul Bott and Loring W Tu. *Differential forms in algebraic topology*, volume 82. Springer Science & Business Media, 2013.
- [6] James R Munkres. *Elements of algebraic topology*. CRC Press, 2018.