

Learning seminar on geometric ramification theory

会议时间：2024 年 7 月 27-29 日

会议地点：杭州西湖大学云谷校区 E4-233

会议日程：

时间	报告人	报告题目
27 日 8:30-11:30	潘翔宇 (北京大学)	The singular support and the characteristic cycle of a constructible sheaf
27 日 14:00-17:00	薛钦 (西湖大学)	On Swan classes
28 日 8:00-11:30	包恺成 (北京大学)	On the construction of non-acyclicity classes
28 日 14:00-17:00	熊芷楠 (北京大学)	Characteristic Classes of Flat Étale Systems
29 日全天	自由讨论	

报告摘要：

潘翔宇：The singular support and the characteristic cycle of a constructible sheaf

The singular support and the characteristic cycle of a constructible sheaf defined by A. Beilinson and T. Saito respectively are crucial in the geometric ramification theory. In this talk, I will explain the definition of the singular support and the characteristic cycle, and prove their existence theorems. If time permits, I will also state their main properties and sketch the proofs. References:

[1] A. Beilinson, Constructible sheaves are holonomic, *Sel. Math. New Ser.* 22, (2016): 1797–1819.

[2] T. Saito, The characteristic cycle and the singular support of a constructible sheaf, *Inventiones mathematicae*, 207 (2017): 597–695.

薛钦：Swan classes

For an l -adic sheaf on a variety over a perfect field, Kato and Saito define the Swan class measuring the wild ramification as a 0-cycle class supported on the ramification locus. In this talk, we will introduce Kato-Saito's swan class and a generalization of the GOS formula using the Swan class.

Reference:

[1] K. Kato and T. Saito, Ramification theory for varieties over a perfect field, *Annals of Mathematics*, 168 (2008): 33–96.

包恺成 : On the construction of non-acyclicity classes

For a separated morphism and a constructible sheaf on the source of the morphism, Yang-Zhao defined the cohomological non-acyclicity class which is a cohomological class supported on the non-acyclicity locus (with respect to the given sheaf). With the aid of this class, they proved a relative version of the cohomological Milnor formula and confirmed a conjecture by T. Saito. In this talk we focus on the formulation of the non-acyclicity class by studying the transversality conditions of morphisms and the construction of the relative cohomological characteristic class. If time permits, we will also introduce the categorical definition of relative characteristic class, after the paper of Qing Lu and Weizhe Zheng.

References:

[1] E. Yang and Y. Zhao, Cohomological Milnor formula and Saito's conjecture on characteristic classes, arXiv:2209.11086v3.

[2] Q. Lu and W. Zheng, Categorical traces and a relative Lefschetz-Verdier formula, Forum of Mathematics, Sigma, Vol.10 (2022): 1-24.

熊芷楠 : Characteristic Classes of Flat Étale Systems

Abstract: I will introduce Abe's paper "Ramification Theory from a Homotopical Point of View I," which studies flat étale systems. I will provide a model-independent introduction to the basic theory of infinite categories, discuss the six-functor formalism of motivic homotopy theory and its trace formalism, and finally present an outline of the work in Abe's paper.

Reference:

[1] T. Abe, Ramification theory from homotopical point of view, I, 2021, arXiv:2206.02401.