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A. 研究概要

剰余体が一般の局所体の分岐群の部分商について特性形式が定義できたことでこの理論の基礎が一段落ついたので，分岐群とその幾何的応用についての本の原稿を書き始め，これまでに 300 ページ弱できた．その中で，局所体上の曲線上のエタール層の隣接輪体の次元公式の曲線のコンパクト化をしない新しい証明を得た．

去年投稿した Frobenius–Witt 微分，混標数のスキーム上のエタール層の特異台，分岐群の次数商についての論文のレフェリーレポートが来たので改訂した．初めの 2 つは掲載が決定している．

The foundation on the ramification groups of local fields with imperfect residue fields was laid last year by the definition of the characteristic forms on the graded quotients. I started writing a book on the theory and geometric applications and nearly 300 pages are already written. On writing, I find a new proof of the dimension formula for nearby cycles of étale sheaves on curves over a local field without using compactification of the curve.

I received referee reports on the three articles submitted last year on Frobenius–Witt differentials, singular supports of étale sheaves on schemes of mixed characteristic and the graded quotients of ramification groups and revised them. The first two are accepted for publication.

B. 発表論文

1. T. Saito "Characteristic cycles and the conductor of direct image", Journal of the American Mathematical Society 34 (2021), 369–410

2. K. Kato, T. Saito "Coincidence of two Swan conductors of abelian characters", Épijournal de Géométrie Algébrique, epiga:5395, 11 novembre 2019, Volume 3

3. K. Kato, I. Leal, T. Saito "Refined Swan conductors mod p of one-dimensional Galois representations", Nagoya Mathematical Journal 236 (2019), 134–182.

4. T. Saito "Ramification groups of coverings and valuations", Tunisian Journal of Mathematics Vol. 1, No. 3, 373-426, 2019

5. T. Saito "On the proper push-forward of the characteristic cycle of a constructible sheaf", Proceedings of Symposia in Pure Mathematics Volume: 97; 2018; Algebraic Geometry: Salt Lake City 2015, Part 2, 485-494

6. T. Saito, Y. Yatagawa "Wild ramification determines the characteristic cycle", Annales Scientifiques de l'Ecole normale superieure, 50, fascicule 4 (2017), 1065-1079.

7. T. Saito "Characteristic cycle of the external product of constructible sheaves", Manuscripta Mathematica, 154, Issue 1-2, 2017, pp 1-12.

8. T. Saito "Wild ramification and the cotangent bundle", Journal of Algebraic Geometry, 26 (2017), 399-473.

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C. 口頭発表

1. Micro support of a constructible sheaf in mixed characteristic, Conference en honneur de Luc Illusie , June 8, 2021. （フランス online）

2. Wild ramification and the cotangent bundle in mixed characteristic Eighth Pacific Rim Conference 7 August, 2020 （アメリカ online）Colloquium at University of Minesota, Feb 18, 2021.

3. Graded Quotients of Ramification Groups of a Local Field with Imperfect Residue Field, January 7, 2020, International conference on arithmetic geometry 2020, TIFR, Mumbai. (インド) mercredi 22 janv. 2020, IHES.（フランス）

4. Etale Cohomology and the Characteristic

Cycle, September 6, 2019, BICMR, Pekin University. （中国）

5. Ramification groups of a local field (with Ahmed Abbes and Kazuya Kato), September 5, 2019 CAS Beijing. （中国）

6. CC, Wild Ramification and Irregular Singularities, Sep 25, 2019 at IMPAN in Warsaw, Poland. （ポーランド）

7. Characteristic cycle of a constructible sheaf, Arithmetic Geometry in Carthage, Summer School, Tunisian Academy Beit al-Hikma, Carthage, Tunisia Thursday, June 20-21, 2019. （チュニジア）

8. Characteristic cycle of constructible sheaves and restriction to curves. "Arithmétique et géométrie algébrique", une conférence en l'honneur d'Ofer Gabber, à l'occasion de son soixantième anniversaire, à l'IHÉS, Vendredi 15 juin, 2018. （フランス）Cohomology of algebraic varieties CIRM October 19th, 2018. （フランス）

9. Characteristic cycles and the conductor of direct image, Interactions between Representation Theory and Algebraic Geometry, the University of Chicago, August 22, 2017 （アメリカ）, p 進コホモロジーと数論幾何学, 東京電機大学 11 月 16 日, The Legacy of Carl Friedrich Gauss, Dec 18, 2017, TSIMF, Sanya, （中国）. Motives in Tokyo on the occation of Shuji Saito's 60th Birthday March 26, 2018, Univ. of Tokyo.

10. Characteristic cycle of an ℓ-adic sheaf, 東北大学代数セミナー 2017 年 1 月 26 日, 第 12 回 鹿児島 代数・解析・幾何学セミナー 2017 年 2 月 13 日, JAMI 2017 Local zeta functions and the arithmetic of moduli spaces: A conference in memory of Jun-Ichi Igusa March 22-26, 2017 Johns Hopkins University（アメリカ）, Fukuoka International Conference on Arithmetic Geometry in 2017 April 20, (日本). Workshop on arithmetic geometry at Tambara 2017 May 22, （日本）. Algebraic Analysis in

honor of Masaki Kashiwara's 70th birthday IHES, June 9 2017（フランス）. Algebraic Analysis and Representation Theory – In honor of Professor Masaki Kashiwara's 70th Birthday – RIMS June 28 （日本）. Regulators in Niseko 2017, 2017 年 9 月 4 日. Tokyo-Lyon Satellite Conference in Number Theory, Univ. of Tokyo, February 21 (Wed), 2018. 第 34 回京都賞記念ワークショップ「基礎科学部門」2018 年 11 月 12 日（月）京大数理研 Arithmetic and Algebraic Geometry 2019 - in honour of Professor Tomohide Terasoma's 60th birthday - January 25 (Fri), 2019 東大数理, CAS Beijing, September 4, 2019（中国）

E. 修士・博士論文

1. (修士) 松田 光智 (MATSUDA Koji): Torsion points of elliptic curves over multi-quadratic fields and cyclotomic fields

F. 対外研究サービス

1. Tokyo–Berkeley Workshop on Number Theory March 14-17, online オーガナイザー

2. Journal of Algebraic Geometry, エディター

3. Documenta Mathematica, エディター

4. Japanese Journal of Mathematics, エディター