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A. 研究概要

正標数のスムーズな多様体上の ℓ 進層の特性サイクルが, 曲線への制限の特性サイクルで定まることを示した. 論文は未完成である.

加藤和也氏, Isabel Leal 氏と共同で, 離散付値体のガロワ群の 1 次指標の refined Swan 導手の精密化を構成した.

加藤氏と共同で, 離散付値体のガロワ群のアーベル商の分岐群のフィルトレーションの定義が, 加藤氏によるコホモロジー的なものと Abbes と私による幾何的なものが, 混標数の場合にも一致することを示した. これも論文は未完成である.

I proved that the characteristic cycle of an ℓ -adic sheaf on a smooth variety of positive characteristic is determined by those of restrictions to curves. The article is in preparation.

Kazuya Kato, Isabel Leal and I constructed a refinement of the refined Swan conductor of an abelian character of the Galois group of a discrete valuation field.

Kazuya Kato and I proved that the two definitions of filtration of ramification groups of the abelian quotient of the Galois group of a discrete valuation field are equal. The cohomological one by Kato and the geometric one by Abbes and myself. The article is in preparation.

B. 発表論文

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2. 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
3. T. Saito, Y. Yatagawa “Wild ramification determines the characteristic cycle”, *Annales Scientifiques de l’Ecole normale supérieure*, 50, fascicule 4 (2017), 1065-1079.
4. T. Saito “Characteristic cycle of the external product of constructible sheaves”, *Manuscripta Mathematica*, 154, Issue 1-2, 2017, pp 1-12.
5. T. Saito “Wild ramification and the cotangent bundle”, *Journal of Algebraic Geometry*, 26 (2017), 399-473.
6. T. Saito “The characteristic cycle and the singular support of a constructible sheaf”, *Inventiones mathematicae*, 207(2), (2017) 597-695,
7. T. Saito “Characteristic cycle and the Euler number of a constructible sheaf on a surface”, *Kodaira Centennial issue of the Journal of Mathematical Sciences, the University of Tokyo*, vol 22, (2015), 387-442.

C. 口頭発表

1. 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)
2. Characteristic cycle of an étale sheaf and its functoriality Purdue University, September 24-28, 2018. (アメリカ)
3. 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 occasion of Shuji Saito’s 60th Birthday March 26, 2018
4. Characteristic cycle of an ℓ -adic sheaf, 数学会総合分科会, 特別講演, 関西大学, 2016 年 9 月 17 日, 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
5. On the characteristic cycle of a constructible sheaf, SAGA Orsay, 22/03/16, (フランス). Hakodate workshop on arithmetic geometry 2016. Hakodate arena. (日本) 6 月 1 日. Tokyo-Seoul at KIAS, June 16-17, 2016 (韓国). PANT Characteristic cycle of a constructible sheaf, July 11-15 2016 (台湾).
 6. The characteristic cycle and the singular support of an étale sheaf, Workshop of arithmetic geometry in Tohoku, October 30, 2014 (日本). Arithmetic and Algebraic Geometry (Shioda 75), UTokyo, School of Math. Sci., Lecture hall, January 31, 2015, (日本). Séminaire Théorie des Nombres, Institute de Mathématique de Bordeaux, mars 20, 2015, Arithmetic Algebraic Geometry, May 15, 2015 (中国). Nordic Number-theory Network, Copenhagen June 16, (デンマーク). Géométrie arithmétique, théorie des représentations et applications, 24 juin 2015, (フランス).
 - Guest seminar, Freie Universität Berlin, June 30 12:30-14:00 16:00-17:30, July 2, 7 (ドイツ). AMS algebraic geometry summer institute, July 27, 2015, (アメリカ). Conference on Algebraic Number Theory, TSIMF Sanya, January 17, 2016, (中国).
 7. On the characteristic cycle of an ℓ -adic sheaf, Journées de géométrie arithmétique de l'IHÉS 25-26 septembre 2014 IHÉS(フランス), 25.
 8. ℓ 進層の分岐と特性多様体、第三回九州合同セミナー 2014 年 1 月 11 日 佐賀大学, Characteristic cycles of a constructible sheaf on a surface, Arithmetic and Algebraic Geometry 2014, 東大数理大講義室 2014 年 1 月 29 日, Conference on Motives and Galois groups on the occasion of Uwe Jannsen's 60th birthday, March 12 14:00-15:00, 2014, University of Regensburg(ドイツ). Geometry and Arithmetic of Surfaces, March 18 10:00-11:00, 2014 LMU and TU Munich(ドイツ).
- D. 講義
1. 微分積分学 (通年): 微積分 (教養学部 1 年生)
 2. 整数論・代数学 XE: 代数多様体上の構成可能層の特性類. (数理大学院・4 年生共通講義)
- E. 修士・博士論文
- F. 対外研究サービス
1. 第 21, 22 回高木レクチャー 6 月 23 日, 11 月 17, 18 日オーガナイザー
 2. Arithmetic Geometry: ℓ -adic and p -adic aspects, 10 to 14 September 2018, conference hall, School of Mathematical Sciences, Komaba, Univ. of Tokyo. オーガナイザー
 3. Workshop on arithmetic geometry, Tokyo-Princeton at Komaba, March 18-22, 2019 オーガナイザー
 4. Journal of Algebraic Geometry, エディター

5. Documenta Mathematica, エディター

6. Japanese Journal of Mathematics, エディター

G. 受賞

日本数学会出版賞：『数学の現在』共編 2019 年
3 月 18 日