

A. 研究概要

前年度の，等標数の局所体の分岐群の研究に引きつづき，混標数の場合の研究を進めた．離散付値環の長さ有限な商環について，分岐群の関手性を示すことにより，等標数の場合と同様に，分岐群の部分商の可換性およびその指標群の記述を示すことができた．

Following the success on the study of the ramification groups of the local fields of equal characteristic in the last year, I studied the mixed characteristic case. By establishing the functoriality of the ramification groups for truncated discrete valuation rings, I proved the commutativity and a description of the character group of a graded quotient of the ramification groups, similarly as in the equal characteristic case.

B. 発表論文

1. A. Abbes and T. Saito “The characteristic class and ramification of an ℓ -adic etale sheaf”, *Inventiones Mathematicae* 168 No. 3 (2007) 567-612
2. K. Kato and T. Saito “Conductor formula of Bloch”, *Publications Mathematiques, IHES* 100, (2004), 5-151.
3. T. Saito “Parity in Bloch’s conductor formula in even dimension”, *Journal de Théorie des Nombres de Bordeaux*, 16-2 (2004), 403-421.
4. T. Saito “Log smooth extension of family of curves and semi-stable reduction”, *Journal of Algebraic Geometry*, 13 (2004), 287-321
5. T. Saito “Weight spectral sequence and independence of ℓ ”, *Journal de l’Institut de Mathematiques de Jussieu* 2, (2003), 1-52.
6. A. Abbes and T. Saito “Ramification of local fields with imperfect residue fields II”, *Documenta Mathematica, Extra Volume Kato* (2003), 3-70 .
7. K. Kato and T. Saito “Ramification theory for varieties over a perfect field”, *math.AG/0402010. Annals of Math. 出版予定*.
8. A. Abbes and T. Saito “Analyse micro-

locale ℓ -adique en caractéristique $p > 0$: Le cas d’un trait”, *math.AG/0602285, Publications RIMS 出版予定*.

9. T. Saito “Wild ramification and the characteristic cycle of an ℓ -adic sheaf” *arXiv:0705.2799, submitted*.
10. T. Saito “Hilbert modular forms and p -adic Hodge theory” *math.AG/0612077, submitted*.

C. 口頭発表

1. Wild ramification and the characteristic cycle of an ℓ -adic sheaf, Chicago (March 14, 2007), A Conference Dedicated to the Mathematical Heritage of Spencer J. Bloch, Fields Institute, Toronto, March 19-23, 2007, Tokyo (April 11, 2007), miniconference on Arithmetic Geometry, Galois representations and modular forms, Paris 13, June 6-8, 2007, Algebraische Zahlentheorie, June 17-23, 2007, Oberwolfach, Algebraic Analysis and Around in honor of Professor Masaki Kashiwara’s 60th birthday, Kyoto RIMS, June 25-30, 2007, Rennes (5 juillet, 2007)
2. Automorphic forms and ℓ -adic representations 4, Ecole d’ete sur la conjecture de modularite de Serre, 8-20 juillet, 2007, Luminy
3. Galois representations and modular forms. July 17-22, 2006. IHES 数論幾何サマースクール.
4. 1進層の特性類と分岐、2006年8月7日、東京大学，日本数学会 代数学シンポジウム.
5. Ramification of schemes over a local field (joint work with K. Kato), Sept. 4, 2006, El Escorial EU network midterm conf., Sept. 13, 2006, RIMS. Conf. on Arith. Alg. Geom.
6. Characteristic class and microlocal analysis on an ℓ -adic etale sheaf (joint work with A. Abbes). International Conference on arithmetic geometry and automorphic forms, 2005.8.15, 南開大学(中国).
7. The characteristic class and ramification of ℓ -adic sheaf (joint works with Abbes and with Kato). Algebraische Zahlentheorie,

- 2005.6.20, Oberwolfach (ドイツ).
8. Ramification theory of schemes in mixed characteristic case (joint work with K. Kato). Conference of algebraic geometry in honor of Luc Illusie, 2005.6.28, Orsay (フランス).
 9. Upper numbering filtration of ramification groups. (joint work with A. Abbes). Galois Representations, 2005.7.8, Strasbourg (フランス).
 10. The characteristic class and the Swan class of an ℓ -adic sheaf (joint work with Ahmed Abbes and Kazuya Kato), Arithmetic and Algebraic Geometry, University of Tokyo, 2004.12.20 Hodge Theory and Log Geometry, JAMI, Johns Hopkins Univ. (アメリカ), 2005.3.16.

D. 講義

1. 代数と幾何: 線形代数 . Jordan 標準形、商空間、テンソル積などを解説した . (理学部 2年生 (後期))
2. 数学 IB: 微積分 . 重積分 , 広義積分 , 微分方程式などを講義した . (教養学部前期課程 講義 1年生)

E. 修士・博士論文

1. (修士) 菊池 英介 (KIKUCHI Eisuke) On the ramification of some non-abelian extensions of degree p^3 (p^3 次非アーベル拡大における分岐について)
2. (修士) 中倉 勘作 (NAKAKURA Kansaku) 局所体上の斜体の還元について

F. 対外研究サービス

1. 研究集会 Of ramification and Vanishing Cycles September 10-14, 2007. Department of Mathematical Sciences, Univ. of Tokyo. オーガナイザー
2. 第3回高木レクチャー, 11月23日, 2007, オーガナイザー
3. Journal of the Institute of Mathematics of Jussieu, エディター
4. Journal de théorie des nombres de Bordeaux, エディター
5. Documenta Mathematica, エディター
6. Japanese Journal of Mathematics, エディター