スーパーグローバルコース数学特別講義 5

Arakelov geometry over an adelic curve
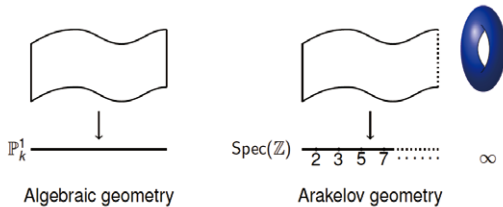
October 2-30, 2018
110 Seminar Room, Faculty of Science Bldg. #3, Kyoto University

In a series of lectures I will present a new framework of Arakelov geometry proposed by Atsushi Moriwaki and myself, namely Arakelov geometry over an adelic curve.

In our setting, an adelic curve refers to a field equipped with a family of absolute values (with possible repetitions) parametrised by a measure space. I will begin with an introduction on elementary geometry of numbers and Arakelov geometry of number fields and function fields and then explain why the setting of adelic curves is natural and permits to unify several frameworks in the literature which could be apparently transversal: Arakelov geometry over number fields and function fields, arithmetic geometry over a finitely generated field (Moriwaki), height theory of M-fields (Gubler), $\mathbb{R}$-filtration method (Chen), Siegel fields (Gaudron and Rémond). The construction of arithmetic objects and arithmetic invariants will be discussed, with an emphasis on the geometry of adelic vector bundles and its relationship with the classic geometry of numbers and Arakelov theory.

The lectures will be concluded by a view of further research topics and open problems. The following is a tentative list of subjects of each lectures.

Arakelov's philosophy
▶ "Compactify" arithmetic varieties by analytic objects
▶ Combine analysis and algebraic geometry methods

$\mathbb{P}^1_k$ — Algebraic geometry

$\text{Spec}(\mathbb{Z})$ 2   3   5   7 .... ∞ — Arakelov geometry

Taken by Atsushi Moriwaki in Copenhagen.

Huayi Chen
Kyoto University
Université Paris Diderot

	10:00-11:30	13:30-15:00
Tue, October 2	1. Geometry of numbers	2. Adelic vector bundles over Q
Tue, October 9	3. Invariants of vector bundles: from geometry to arithmetics	4. Adelic curves, definition and examples
Tue, October 16	5. Birational invariants in classic Arakelov geometry	6. Adelic vector bundles on adelic curves
Tue, October 30	7. Geometry of adelic line bundles	

❖ 本講義は「スーパーグローバルコース数学特別講義 5」として、大学院の学生には 1 単位認定されます。