



21 November, 2024

## Ph.D. Thesis Defense

- Speaker : *Subhadip Majumder*  
Title : *Kato filtration via de Rham-Witt complex and applications*  
Date & Time : *Monday, 25 November, 2024 at 11:00 a.m.*  
Venue : **Maths. Seminar Room (A- 369)**

### Abstract

For a Henselian discrete valued field  $K$  of characteristic  $p > 0$ , Kato defined a ramification filtration  $\{\mathrm{fil}_n H^q(K, \mathbb{Q}_p/\mathbb{Z}_p(q-1))\}_{n \geq 0}$  on the étale motivic cohomology  $H^q(K, \mathbb{Q}_p/\mathbb{Z}_p(q-1))$ . One can also define a ramification filtration on  $H^q(U, \mathbb{Z}/p^m(q-1))$  using the local Kato-filtration, where  $U$  is the complement of a simple normal crossing divisor in a regular scheme  $X$  of characteristic  $p > 0$ . In this talk, we shall provide a cohomological description of these filtrations using de Rham-Witt sheaves and present several applications.

To achieve our goal, we will present a theory of the filtered de Rham-Witt complex of  $F$ -finite regular schemes of characteristic  $p > 0$  and prove several properties which are well known for the classical de Rham-Witt complex of regular schemes. As applications, we prove a refined version of Jannsen-Saito-Zhao's duality over finite fields, and a similar duality for smooth projective curves over local fields. As another application, we prove a Lefschetz theorem for unramified and ramified Brauer group (with modulus) of smooth projective  $F$ -finite schemes over a field of characteristic  $p > 0$ .

Milind Pilankar