

# TATA INSTITUTE OF FUNDAMENTAL RESEARCH

School of Mathematics

February 2, 2018

## NOTICE

*Federico Binda* from University of Regensburg, Germany, will speak on

**‘Laumon 1-motives and motives with modulus’**

from 04.00 p.m. to 05.00 p.m. on Wednesday, 07 February, 2018 in the **Lecture Room (AG-77)** of the Institute.

Vivek V. Vengurlekar

### **Abstract**

In 1974, Deligne introduced the category  $\mathcal{M}_1$  of 1-motives (built out of semi-abelian varieties and lattices) as algebraic analogue of the category of mixed Hodge structures of level  $\leq 1$ . Today, thanks to the works of Ayoub, Barbieri-Viale, Kahn, Orgogozo and Voevodsky, we know that the derived category  $D^b(\mathcal{M}_{1,\mathbb{Q}})$  can be embedded as a full subcategory of  $\mathbf{DM}_{gm}^{eff}(k) \otimes \mathbb{Q}$ , and that this embedding admits a left adjoint, the so-called “motivic Albanese functor”. Deligne’s original definition was later generalised by Laumon, introducing what are now known as “Laumon 1-motives”, to include in the picture all commutative connected group schemes (rather than only semi-abelian varieties). Due to the presence of unipotent groups (such as  $\mathbb{G}_a$ ), the derived category of this bigger category cannot be realised as a full subcategory of Voevodsky’s motives. In this talk, we will explain how at least a piece of this category (the “étale part”) can be embedded in the bigger motivic category  $\mathbf{MDM}^{eff}(k)$  of “motives with modulus”, recently introduced by Kahn-Saito-Yamazaki, and that this embedding also admits a left adjoint (a generalized motivic Albanese functor). This is a joint work with Shuji Saito.

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