Contribution ID: **26** Type: **not specified**

Explicit constructions of motivic Galois Groups

Tuesday, 11 June 2024 14:30 (1 hour)

This talk is based on the joint work with Guangyu Zhu.

The category of $\mathbb{Q}$-mixed Hodge-Tate structures is canonically equivalent to the category of graded comodules over a graded commutative Hopf algebra H over $\mathbb{Q}$. The H is isomorphic to the tensor algebra of the direct sum over $n > 0$ of $\mathbb{C}/\mathbb{Q}(n)$, placed in the degree n, with the shuffle product. However this isomorphism is not natural, and does not work in families. We give a natural explicit construction of the Hopf algebra H.

Generalizing this, we define a Hopf dg-algebra describing a dg-model of the derived category of variations of Hodge-Tate structures on a complex manifold X. Its cobar complex is a dg-model for the rational Deligne cohomology of X.

The main application is explicit construction of regulators. We define refined periods. They are single-valued, and take values in the tensor product of $\mathbb{C}^*$ and $n-1$ copies of $\mathbb{C}$. We also consider a p-adic variant of the construction.

Presenter: GONCHAROV, Alexander (Yale University)