NCTS

An Introduction to Global and Local G-Shtukas

10:00–11:30 on August 20, 25, and 27, 2026

Lecture Room B, 4th Floor,
The 3rd General Building, NTHU

Speaker

Wansu Kim (Korea Advanced Institute of Science and Technology)

Organizers

Fu-Tsun Wei (National Tsing Hua University)
Chieh-Yu Chang (National Tsing Hua University)

1 Introduction & Purposes

Introduced by Drinfeld, shtukas provide a geometric framework for studying automorphic forms and Galois representations over function fields. They were central to Lafforgue's proof of the Langlands correspondence for $GL(n)$ and now occupy a pivotal position in both the arithmetic and geometric Langlands programs. More recently, moduli stacks of G-shtukas have emerged as the function-field analogue of Shimura varieties, serving as the geometric setting for the higher Siegel–Weil formula of Feng, Yun, and Zhang and its associated theory of special cycles. The goal of this lecture series is to give an introduction to the theory of global and local G-shtukas.

2 Outline & Descriptions

I will begin with the classical examples of Drinfeld shtukas, elliptic sheaves arising from Drinfeld modules, and the D-elliptic sheaves introduced by Laumon–Rapoport–Stuhler, following the expository account of Blum and Stuhler. I will then explain how this theory extends to suitable integral models of general reductive groups G, and introduce moduli stacks of bounded global G-shtukas, drawing on work of Arasteh Rad–Hartl, Bieker, and Hartl–Xu. Finally, I will turn to the local theory, beginning with bounded local $GL(n)$-shtukas and divisible Anderson modules, as discussed in my Banff proceedings article with Hartl, and then considering bounded local G-shtukas and their relation to global G-shtukas. Throughout the lectures, the case of $GL(n)$ will serve as the principal source of examples.

Registration

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