Shtukas and the Langlands program: a bird’s eye view

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665 Commonwealth Avenue, CDS 365
Tea and cookies at 3:30

Abstract: What is “the Langlands program” and how can we talk about it without getting hopelessly lost in the weeds? Over a number field it predicts a systematic correspondence between “automorphic representations” and “Galois representations.” Currently the only means we have of linking the two sides is the study of Shimura varieties and their cohomology. But that study is limited; there isn’t always a Shimura variety in every desired context.

If you replace “number field” with “function field,” however, the story is much rosier, as we have access to Drinfeld’s powerful notion of the “shtuka.” I’ll review these and also hint at the modern approaches to the Langlands program over a \( p \)-adic field, due to Fargues-Scholze.