THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

MINI COURSE

Categorical local Langlands: past, present and future

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Abstract

In 2021, Fargues and Scholze formulated a remarkable conjecture: for a reductive group G over a p-adic field, there should be an equivalence of categories between sheaves on the moduli stack of G-bundles on the Fargues–Fontaine curve and (ind-)coherent sheaves on the stack of L-parameters for G. I will begin by reviewing the statement of this conjecture, its historical origins, and its connection with the geometric Langlands philosophy. In my recent joint work with Lucas Mann, we have proved this conjecture for GLn and many classical groups. I will present a detailed outline of our proof, with an emphasis on the new ideas. Finally, I will try to convey the real power (for me) of categorical local Langlands: it converts impossible questions about representations of p-adic groups into tractable problems in algebraic geometry. I'll illustrate this slogan with some examples, and show how to actually do concrete calculations using these tools.

Lecture 1:	November 17, 2026 (Tuesday)	10:00 am – 12:00 noon	Room 309, Run Run Shaw Bldg., HKU
Lecture 2:	November 19, 2026 (Thurday)	10:00 am – 12:00 noon	Room 210, Run Run Shaw Bldg., HKU
Lecture 3:	November 24, 2026 (Tuesday)	10:00 am – 12:00 noon	Room 210, Run Run Shaw Bldg., HKU
Lecture 4:	November 26, 2026 (Thurday)	10:00 am – 12:00 noon	Room 210, Run Run Shaw Bldg., HKU

All are welcome