

Séminaire de théorie des nombres

Le 16 février 2026 à 14h (Jussieu)

Twisting Higgs modules and functoriality of the p -adic Simpson correspondence

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Résumé : The classical Simpson correspondence describes complex linear representations of the fundamental group of a smooth complex projective variety in terms of linear algebra objects, namely Higgs bundles. Inspired by this, Faltings initiated in 2005 a p -adic analogue, aiming to understand continuous p -adic representations of the geometric fundamental group of a smooth projective variety over a p -adic local field. I will present ongoing joint work with A. Abbes and M. Gros, aimed at building a robust framework for a broader functoriality of the p -adic correspondence. We introduce a new method for twisting Higgs modules using Higgs-Tate algebras. This construction is inspired by our earlier joint approach with A. Abbes and M. Gros to the p -adic Simpson correspondence, which it encompasses as a special case. The resulting framework provides twisted pullbacks and twisted higher direct images of Higgs modules, allowing us to study the functoriality of the p -adic Simpson correspondence under arbitrary pullbacks and proper (log)smooth direct images by morphisms that do not necessarily lift to the infinitesimal deformations of the varieties chosen to construct the p -adic Simpson correspondence. In addition, we clarify how this new twisting relates to recent constructions involving line bundles on the spectral variety.