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The p-adic Langlands Program and Breuil's Lattice Conjecture

Roughly speaking, the local Langlands correspondence is between n-dimensional Galois representations of $\mathrm{Gal}(\overline{\mathbb{Q}_p}/\mathbb{Q}_p)$ and certain admissible smooth representations of $\mathrm{GL_n}(\mathbb{Q}_p)$. However, if we take the coefficient field to be an extension of the p-adic numbers, the objects on both sides are much more complicated, and it is the study of the p-adic Langlands Program. Currently, it is known only for the group $\mathrm{GL}_2(\mathbb{Q}_p)$. Breuil conjectured a lattice conjecture, which provides evidence for such a correspondence in the case of $\mathrm{GL}_2(K)$, where K is an unramified extension of $\mathbb{Q}_p$.