An introduction to admissible Banach representations of $p$-adic Lie groups

The $p$-adic Langlands local correspondence, still in its infancy, is a strong motivation for studying the category $\mathcal{C}(G)$ of *admissible Banach unitary p-adic representations of a p-adic Lie group $G$*, introduced by Schneider and Teitelbaum.

The p-adic Langlands correspondence for $GL(2, Q_p)$, due to Colmez, associates to an irreducible $p$-adic Galois representation $V$ of $Q_p$ of dimension 2, an admissible Banach unitary $p$-adic representation $B(V)$ of $GL(2, Q_p)$; recently, Dospinescu simplified Colmez's proof and shed some light on the category $\mathcal{C}(G)$. I hope to present the main known results and some open problems in $\mathcal{C}(G)$, and give examples when $G = GL(2, Q_p)$.