Non-commutative Iwasawa algebras

Abstract:

Non-commutative Iwasawa algebras are completed group rings of compact $p$-adic Lie groups with mod-$p$, or $p$-adic integer, coefficients. They can also be viewed as rings of continuous $p$-adic distributions on the group in question. These algebras have found applications in several areas of number theory, including non-commutative Iwasawa theory and the $p$-adic local Langlands correspondence, but they also provide interesting examples of non-commutative Noetherian rings which are similar in certain respects to universal enveloping algebras of finite dimensional Lie algebras. After giving the basic definitions and some examples, I will advertise some open questions on the algebraic structure of these Iwasawa algebras.