Séminaire de géométrie algébrique de Rennes[1]

Exposé du jeudi 24 mai 2012

THE RELATIVE BREUIL-KISIN CLASSIFICATION OF p-DIVISIBLE GROUPS AND FINITE FLAT GROUP SCHEMES

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Résumé : Let $\mathscr{O}_K$ be a p-adic discrete valuation ring with perfect residue field k of characteristic $p > 2$. Then Kisin showed that p-divisible groups over $\mathscr{O}_K$ can be classified by some modules with Frobenius structure over $\mathfrak{S} := W(k)[[u]]$ (so-called, a Breuil-Kisin module). Later, Brinon-Trihan generalised this result when the residue field of $\mathscr{O}_K$ is imperfect (but has a finite p-basis).

In this talk, we give a further generalisation of the results of Kisin and Brinon-Trihan over a base ring R which is a formally smooth adic $\mathscr{O}_K$-algebra with some reasonable finiteness condition. When $p > 2$, we can recover the (integral) p-adic Tate module from the corresponding Kisin module.

A similar result can be obtained for a certain class of finite flat group schemes (including the ones killed by p and truncated Barsotti-Tate groups) by Zariski-locally embedding them into some p-divisible group (and using Vasiu's construction of moduli of connections). Note that when the base is local, there is a pre-existing alternative approach via display theory (by Vasiu-Zink and Lau), which works when R is a complete regular local ring with perfect residue field.

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[1]Les jeudis matin, de 10 h 30 à 11 h 30, salle 004, IRMAR (bâtiment 22), Université de Rennes 1, Campus de Beaulieu