Exposé du jeudi 17 février 2011

$\mathbb{F}_p$-CRYSTALS AND UNIT $\mathscr{O}_F$-MODULES

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Résumé : Over $\mathbb{F}_p$-schemes X there are two descriptions of étale sheaves in terms of quasi-coherent sheaves with a Frobenius action : For smooth X, Emerton and Kisin (EK) have constructed a contravariant equivalence of categories from bounded complexes of sheaves of unit $\mathscr{O}_F$-modules with locally finitely generated cohomology to the derived category of étale sheaves on X with constructible cohomology that is functorial in X and compatible with $f^!$, f_* and tensor product. For arbitrary noetherian X, Pink and myself (PB) have obtained a covariant equivalence (resembling Artin-Schreier theory) between what we term $\mathbb{F}_p$-crystals and constructible étale sheaves on X which is functorial in X and compatible with f^*, $f_!$ and tensor product. I shall talk about joint work with Manuel Blickle where we construct a direct contravariant comparison between the category of EK and that of PB for smooth X of finite type over $\mathbb{F}_p$. If time permits, I shall recast recent work of C. Miller in the setting of EK as a statement in PB anticipated by results of F. Gardeyn.