

only if there exist a faithfully flat $A \rightarrow A'$ s.t. $B' = W A'$ (fin. pred.). //

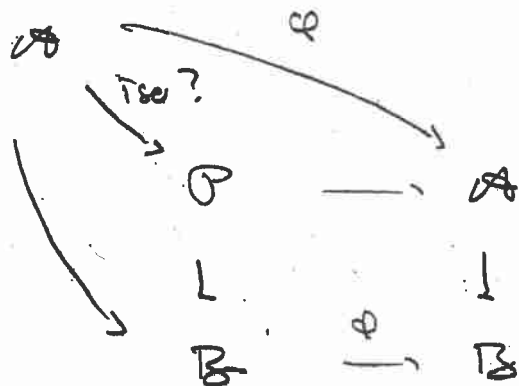
Thm The rel. Frob. B an iso. for the following maps of stacks over \mathcal{A}_p .

$$\mathcal{A} = (M_{\text{Ell}})_{\text{ss}}^{\wedge} \quad - \quad \text{completion at super-sing. locus}$$

↓

$$\mathcal{B} = (M_{\text{FG}})_{h=0}^{\wedge} \quad - \quad \text{"height = 2 locus"}$$

pf let R be a local \mathcal{A}_p -alg. with nilp. max. ideal \mathfrak{m} . To give a map $\text{Spec } R \rightarrow \mathcal{A}$ corresponds to an elliptic curve \mathcal{C} over R s.t. \mathcal{C}/\mathfrak{m} is super-sing. Similarly, $\text{Spec } R \rightarrow \mathcal{B}$ corresponds to a f. grp. G over R s.t. G/\mathfrak{m} is height 2.

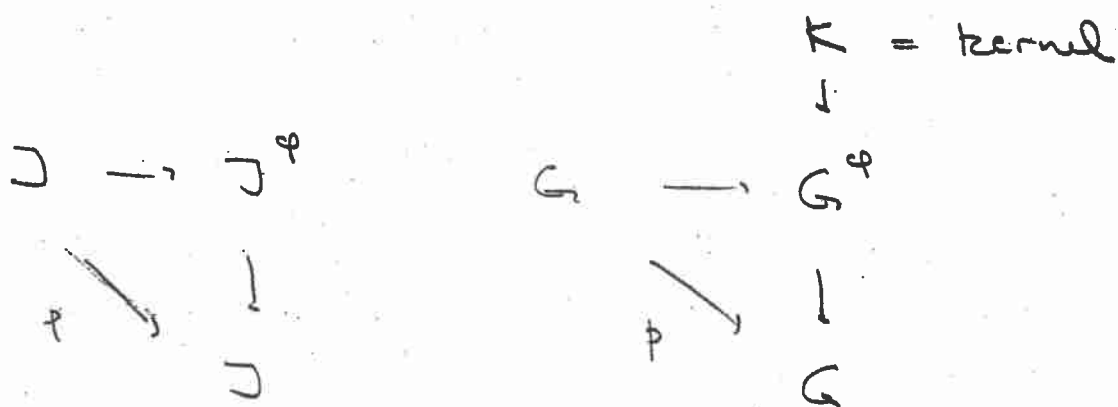


A map $\text{Spec } R \rightarrow \mathcal{O}$ corresponds to an ell. curve \mathcal{J} and a formal grp G as above together with an iso. $G^{\mathfrak{p}} \cong \hat{\mathcal{J}}$.

If $\text{Spec } R \rightarrow \mathcal{A}$ corresp. to the ell. curve C , then the comp. w. $\mathcal{A} \rightarrow \mathcal{O}$ corresponds to $\mathcal{J} = C^{\mathfrak{p}}$, $G = \hat{C}$. We must show that given $(\mathcal{J}, G, G^{\mathfrak{p}} \cong \hat{\mathcal{J}})$, there exists C s.t. $C^{\mathfrak{p}} = \mathcal{J}$, $\hat{C} = G$. Now

Super-singular: An elliptic curve \mathcal{J} over a field is super-singular iff and only iff

$$\left\{ \begin{array}{l} \text{p-subgrps.} \\ \text{of } \hat{\mathcal{J}} \end{array} \right\} \xrightarrow{\sim} \left\{ \begin{array}{l} \text{p-subgrps.} \\ \text{of } \mathcal{J} \end{array} \right\}$$



$$\hat{\mathcal{J}} = G^{\mathfrak{p}}, \quad K \subset \mathcal{J}; \quad \text{define } C = \mathcal{J}/K$$