

# CORRECTIONS TO “ $p$ -DESCENT IN CHARACTERISTIC $p$ ”

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- Felipe Voloch points out that the description of  $\text{Sel}(K, V)$  in part (a) of Proposition 3.3 is not correct when  $A$  is a  $(p - 1)^{st}$  power. Under the hypotheses of the Proposition, Lemma 1.2 shows that  $\text{Sel}(K, V) \cong H^1(X, \text{Ker } V)$ . There is an exact sequence

$$0 \rightarrow \text{Ker } V \rightarrow \mathcal{O}_X \xrightarrow{\varphi_A} \mathcal{O}_X \rightarrow 0$$

where  $\varphi_A(x) = x^p - Ax$ . Taking cohomology yields an exact sequence

$$0 \rightarrow k/\varphi_A(k) \rightarrow \text{Sel}(K, V) \rightarrow \{\eta \in H^1(X, \mathcal{O}_X) | \text{Fr}(\eta) = A\eta\} \rightarrow 0.$$

When  $A$  is not the  $(p - 1)^{st}$  power of an element of  $k$ , then  $k/\varphi_A(x)$  is zero and the statement is correct. However, when  $A$  is a  $(p - 1)^{st}$  power,  $k/\varphi_A(k)$  has order  $p$  and the Selmer group is larger than stated.

Our thanks to Voloch for pointing out this mistake.

- Also, on page 241, 4 lines from the bottom, “[6], III.7.5” should be “[7], III.7.5”.