$(\mathcal{M}_{Ell})_{ord}$: $c_4 \not\equiv 0$.

$\mathcal{O}^{top}(\mathcal{M}_{Ell})^{\wedge}_{p}$ — only involves curves with either $c_4 \not\equiv 0$ or $c_6 \not\equiv 0$.

(This is true for every prime $p \geq 5$.)

After localizing at any prime p,

$$\mathcal{M}_{Ell} = \Delta^{-1}\mathcal{M}_{Weier} \cup v_1^{-1}\mathcal{M}_{Weier}$$

$$= \Delta^{-1}\mathcal{M}_{Weier} \cup c_4^{-1}\mathcal{M}_{Weier}$$

$$\left(p \geq 3 : \; = \Delta^{-1}\mathcal{M}_{Weier} \cup c_6^{-1}\mathcal{M}_{Weier} \right).$$

To calc. $\pi_* \mathcal{O}^{top}(\mathcal{M}_{Ell})$:

1) Find an étale cover

$$\operatorname{Spec} R \to \mathcal{M}_{Ell}.$$

2) Write down the nerve

$$\cdots \operatorname{Spec} R_2 \rightrightarrows \operatorname{Spec} R_1 \rightrightarrows \operatorname{Spec} \underset{R}{\underset{\|}{R_0}} \to \mathcal{M}_{Ell}$$

$$\mathcal{O}_n := \mathcal{O}^{top}(\operatorname{Spec} R_n)$$

3) htpy spectral sequence for co-simpl. spectrum

$$\cdots \ \pi_* \mathcal{O}_2 \ \substack{\leftarrow\\\leftarrow\\\leftarrow} \ \pi_* \mathcal{O}_1 \ \substack{\leftarrow\\\leftarrow} \ \pi_* \mathcal{O}_0 \ .$$

We have

$$\pi_0 \mathcal{O}_n = R_n = H^0(\operatorname{Spec} R_n ; \omega^{\otimes 0}) ,$$

$$\pi_{odd} \mathcal{O}_n = 0$$

$$\pi_{2t} \mathcal{O}_n = H^0(\operatorname{Spec} R_n , \omega^{\otimes t})$$

where ω is the sheaf of invariant 1-forms on

$$\operatorname{Spec} R_n \xrightarrow{J_n} \mathcal{M}_{Ell} .$$

So E_2-term is the coh. of the cx.

$$\cdots \ \substack{\leftarrow\\\leftarrow\\\leftarrow} \ H^0(\operatorname{Spec} R_1 , \omega^{\otimes t}) \ \substack{\leftarrow\\\leftarrow} \ H^0(\operatorname{Spec} R_0 , \omega^{\otimes t}) \ .$$

This is the Cech cx. for calculating $H^*(\mathcal{M}_{Ell} , \omega^{\otimes t})$, so sp. seq. is:

$$E_2^{s,t} = H^{-s}(\mathcal{M}_{Ell} , \omega^{\otimes \frac{t}{2}}) \Rightarrow \pi_{s+t} \mathcal{O}^{top}(\mathcal{M}_{Ell}) .$$