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$$H^*(\mathcal{M}_{DR}) \cong H^*(\mathcal{M}_B)$$

$\uparrow$ $\qquad$ $\uparrow$

$W_k = \mathcal{H}^k$ $\qquad$ non-pure

$xy = 1 \qquad \mathbb{C}^*$

$p-1$

$|\mathbb{F}_q^*| = q-1$

$E(\mathbb{C}^*, q) = q-1$

On H^1: $W_1 = 0$, $W_2 = H^1$.

$$\left.\begin{matrix} q\,H^1 \\ 1\,H^0 \end{matrix}\right\} q-1$$

$W_1 H^1 \ni \leftarrow H^1(\overline{\mathbb{C}^*})$

$(\mathbb{C}^*)^2 \overset{\text{diff}}{\cong} \mathcal{M}_{DR}$

$\uparrow$

not algebraic

$$[A_1, B_1][A_2 B_2] = c_n \mathrm{Id}$$

$$B_i, A_i \in GL_n(\mathbb{F}_q)$$

$GL_n(\mathbb{Q}_p)$

$GL_n(\mathbb{F}_q)$

$(q-1)^2 = \underline{q^2 - 2q + 1}$