

Title

D. Zack Garza

Friday 20th March, 2020

Contents

1 Friday February 21st

1

1 Friday February 21st

Question: how do we define $h_{V,D}$?

Answer: write $D = D_1 - D_2$ which are (very) ample divisors and basepoint free. We then obtain embeddings

$$\begin{aligned}\varphi_1 : V &\hookrightarrow \mathbb{P}_K^{n_1} \\ \varphi_2 : V &\hookrightarrow \mathbb{P}_K^{n_2}.\end{aligned}$$

So write

$$h_{V,D}(p) = h(\varphi_1(p)) - h(\varphi_2(p)) + O(1)$$

Example 1.1.

For E/K an elliptic curve,

- $2[0]$ is an ample divisor
- $3[0]$ is a very ample divisor.

Let K be a local field (i.e. \mathbb{C}, \mathbb{R} , a p -adic field, or $\mathbb{F}_q((t))$ formal Laurent series) and A/K be an abelian variety; we want to understand $A(K)$. We know this has the structure of compact abelian K -analytic Lie group.

- Question 1: What does Lie theory say?
- Question 2: What extra information comes from A/K being a g -dimensional abelian variety?

If $K = \mathbb{C}$, then $A(K) \cong (\mathbb{R}/\mathbb{Z})^{2g}$.