Department of Mathematics, BGU

# Arithmetic applications of o-minimality

**On** *Tuesday, June ,29 2021*

**At** *11:10 – 13:00*

**In** *online*

Et al

will talk about

## Assorted topics

Abstract: Shimura varieties, the end of section 3 and possibly additional topics

- $S/\mathbb{C}$ als var.

V.H.S on $S$ :

$V/S$ local system $/\mathbb{R}$

$V \otimes \mathcal{O}_S$ - a v.b $/S = V_S$

- $\nabla : V_S \to V_S \otimes \Omega^1_S$

$v \in V \quad \nabla v = 0$

$+ \quad F^{i+1} \subset F^i \subset \cdots V_S$

- $\nabla F^i \subseteq F^{i-1} \otimes \Omega^1_S$

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For each $s \in S$

$V_s$ + $F^i \cap V_s$ a pure H.S..

- $X \xrightarrow{\pi} S$ proper.

- $V = R^i \pi_* \mathbb{R}$ a V.H.S.

- Periods domains $\Gamma \backslash D$

period map $\Phi : S \to \Gamma \backslash D$

Griffiths : $\Phi$ analytic

Bakker, Klingler Tsimerman

$\Phi$ definable

Conj: Im $\Phi$ is algebraic

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Griffiths: $V/S$

$S \to \Gamma\backslash D$

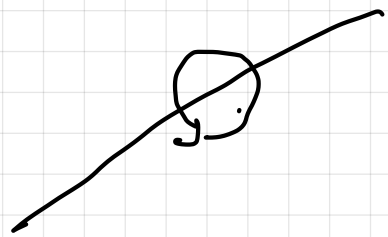
$S \subset \bar{S}$, $\bar{S} - S = E$

$s \in E \qquad s \in U \cong \Delta^n$

$$\Delta = \{ |z| < \varepsilon \}$$

$$U \cap S \cong \Delta^* \times \Delta^{n-1}$$

local monodromy = Picard-Lefschetz operator.



Assume: local monodromy has fin image. $\Rightarrow$ trivialize monodromy

$\bar{S} \supset S^* \supset S$

$\uparrow$

$S \cup$ points with fin monodromy

Griffiths: 1. $\Phi$ extends to $S^*$

2. $\Phi : S^* \to \Gamma \backslash D$ proper

3. $\Phi(S^*)$ is closed in $\Gamma \backslash D$

4. $\Phi(S^*) - \Phi(S)$ analytic subvariety

**Please Note the Unusual Time!**