

Department of Mathematics, BGU

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# Arithmetic applications of o-minimality

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**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


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$S/\mathbb{C}$  als  $V$

V.H.S on  $S$ :

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

$V \otimes \mathcal{O}_S \rightarrow V/S = V_S$

$\nabla: V_S \rightarrow V_S \otimes \Omega_S^1$

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

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

$\nabla F^i \subset F^{i-1} \otimes \Omega_S^1$

For each  $s \in S$

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

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

$V = \mathbb{R}^i \pi_x \mathbb{R}$  a v.H.S.

Periods domains  $\Gamma \setminus D$

Period map  $\phi: S \rightarrow \Gamma \setminus D$

. arifmetik :  $\phi$  analytisch

Bakter, klinisch, immerman  
 $\phi$  definierbar..

. Conj: Im  $\phi$  ist algebraisch

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arithmetik:  $V/S$

.  $S \rightarrow \mathbb{P}^1 \setminus D$

$S \subset \overline{S}$ ,  $\overline{S} - S = \mathbb{F}$

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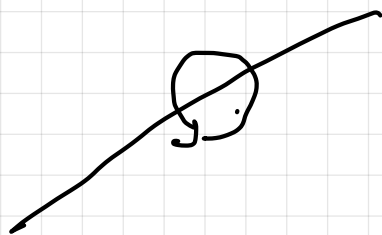
$$S \subset \mathbb{F} \quad S \in \mathcal{U} \cong \Delta^n$$

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

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

local boundary = Poincaré-Lefschetz

operator.



Assume : local boundary has finite  
image.  $\Rightarrow$  tubular neighborhood

$\hookrightarrow$

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

$S \cup$  points with fin boundary

Criteria: 1.  $\phi$  extends to  $S^*$

2.  $\phi: S^* \rightarrow \mathbb{R} \setminus D$  proper

3.  $\phi(S^*)$  is closed in  $\mathbb{R} \setminus D$

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

**Please Note the Unusual Time!**