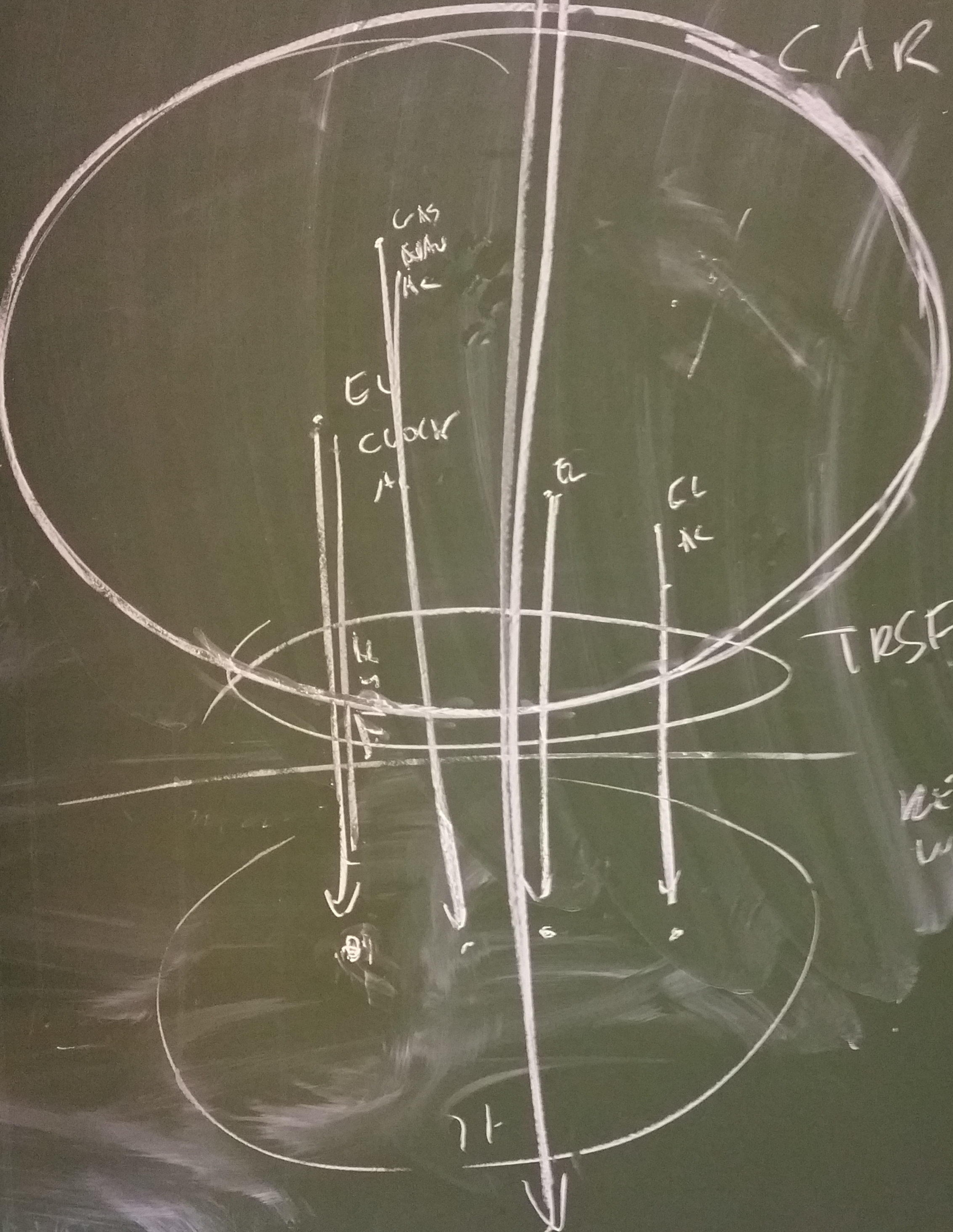


CLAFER

GAS
EU

PRODUCT
FAMILY

CAR



GAS
EU
AC

EU
COURT
AC

EU

EU
AC

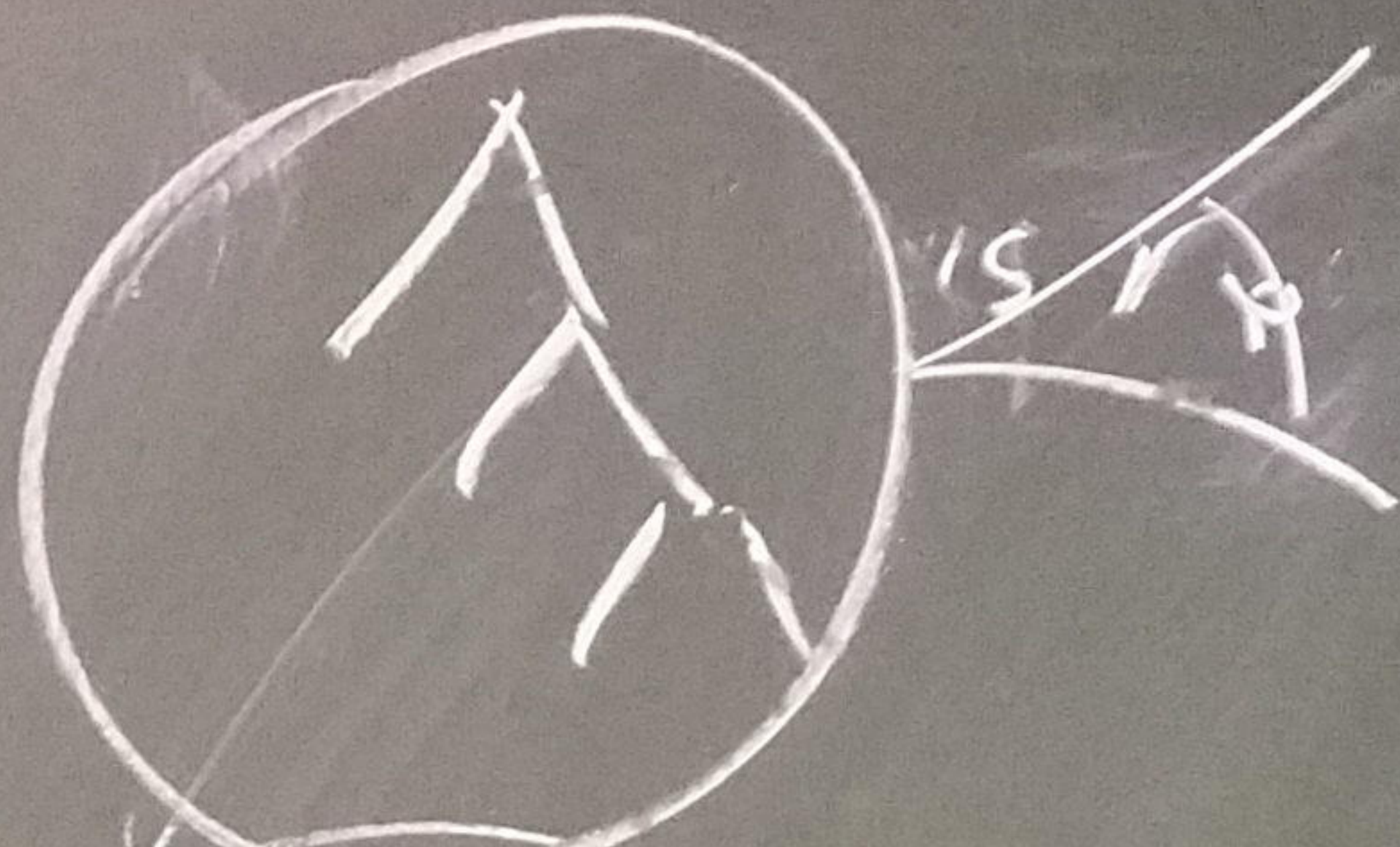
T
R
S
E

T R S E

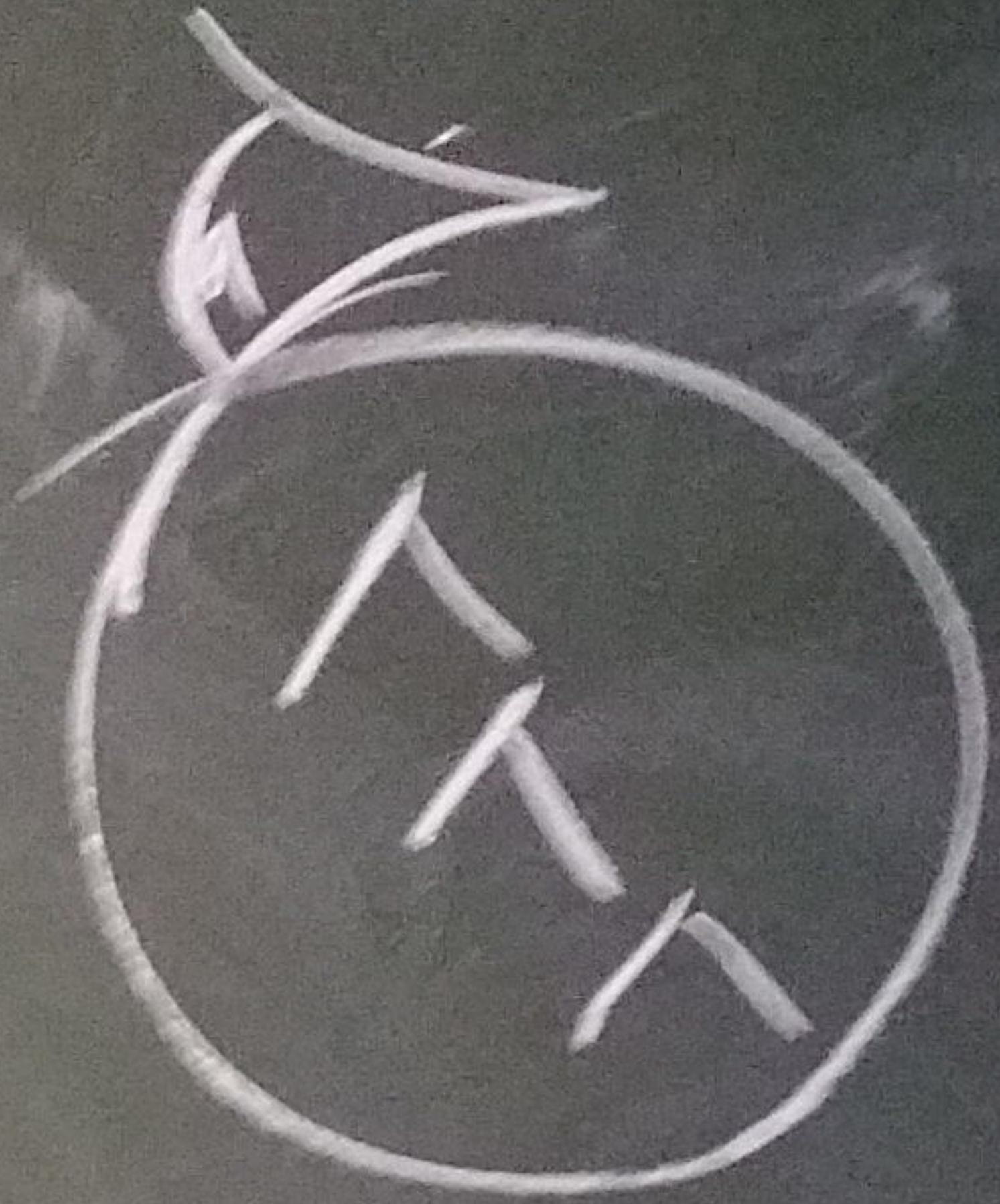
WORLD
WORK

T
R

AOP

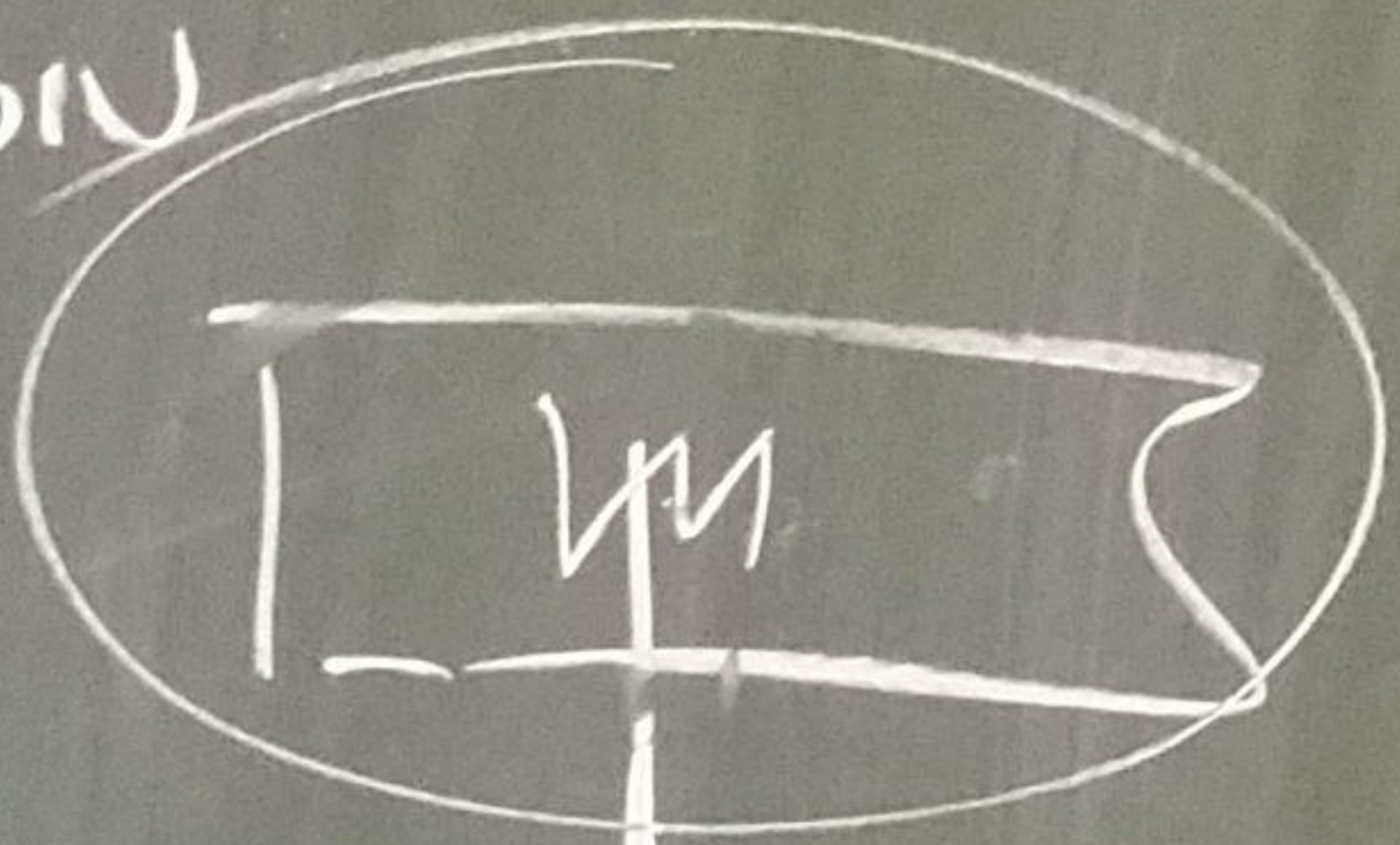


G P C E

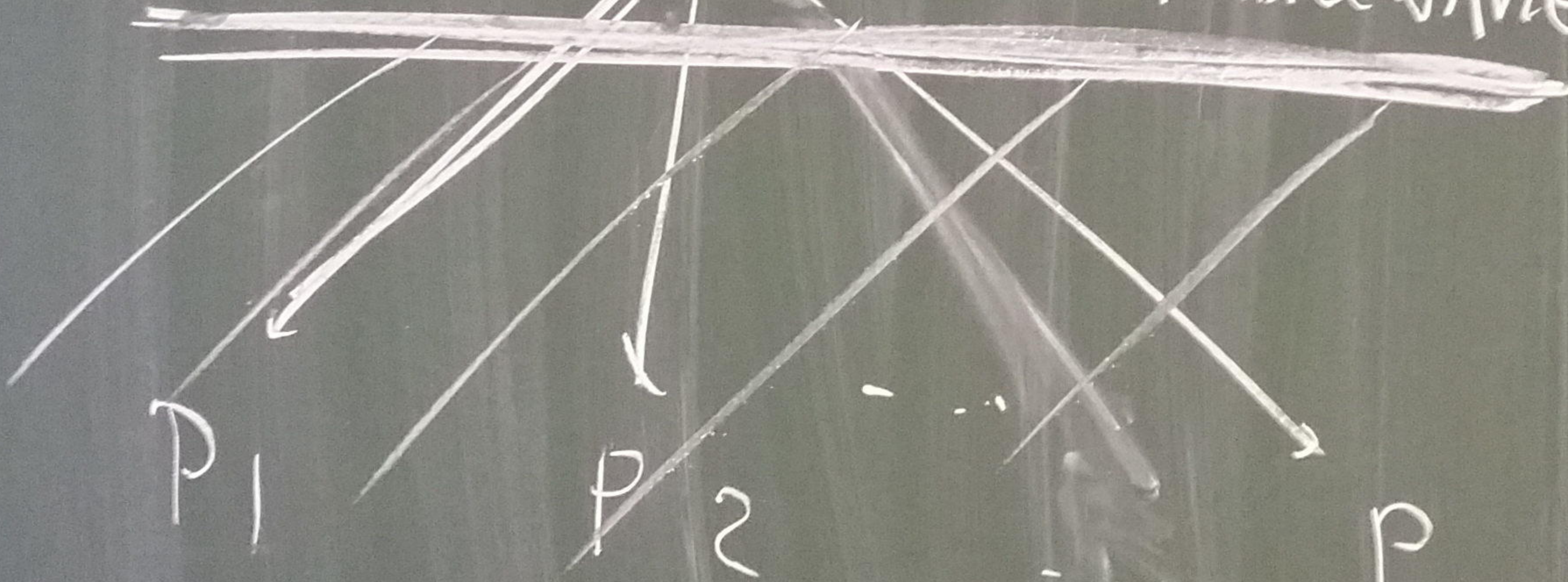


FUNCTION

GENERATIVE
DEPLOYMENT



MIDDLEWARE



P1

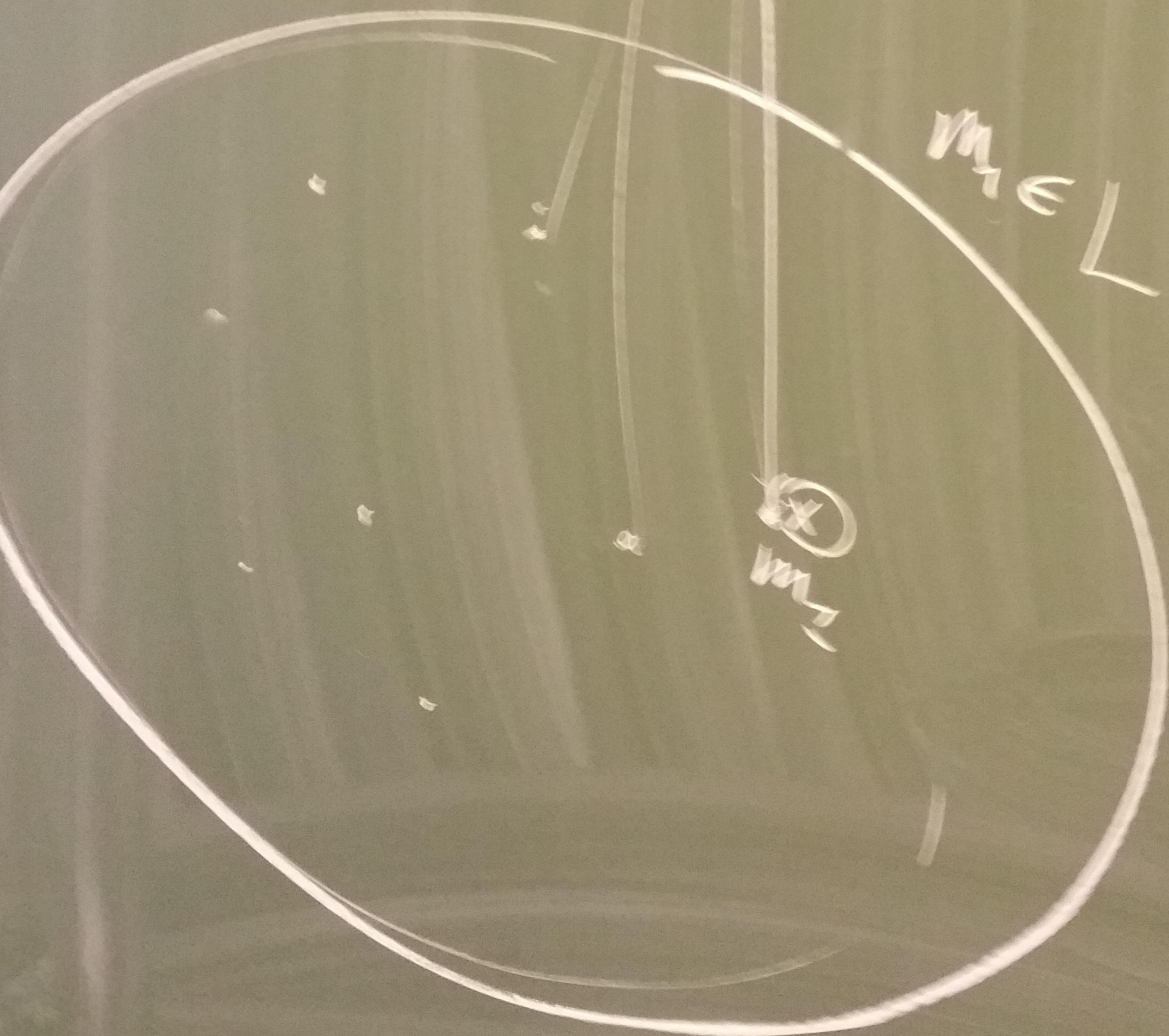
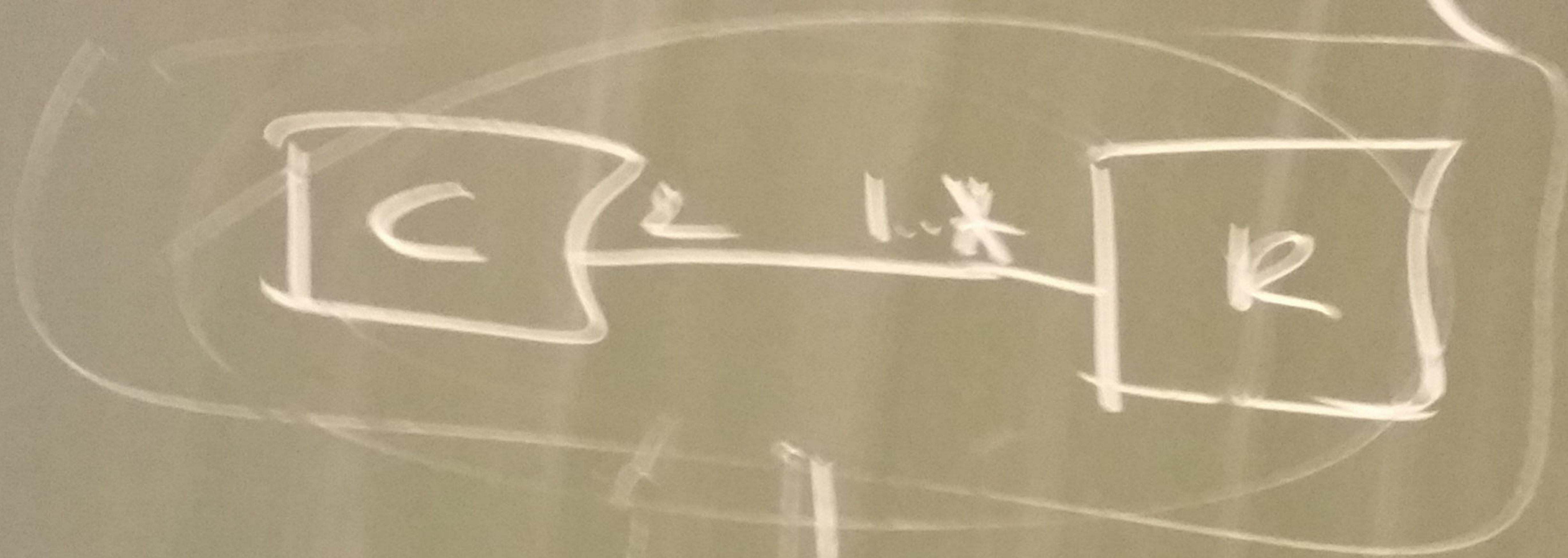
P2

Pn

PLATFORM

Meta Depth

SPEC (L)

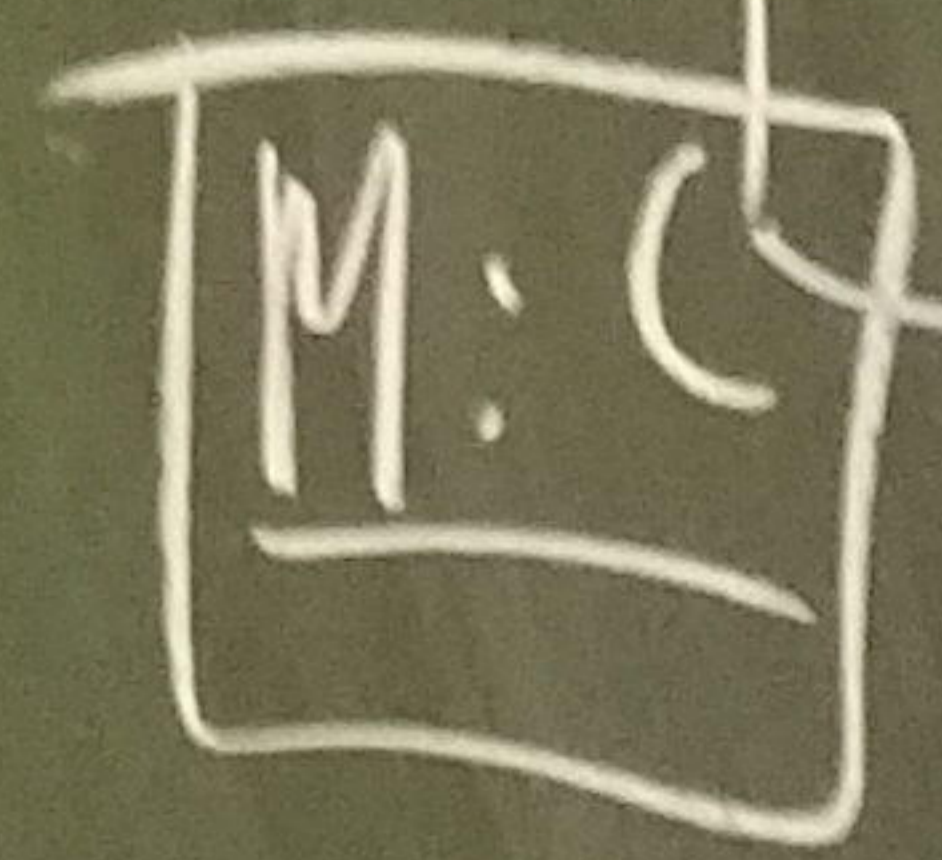
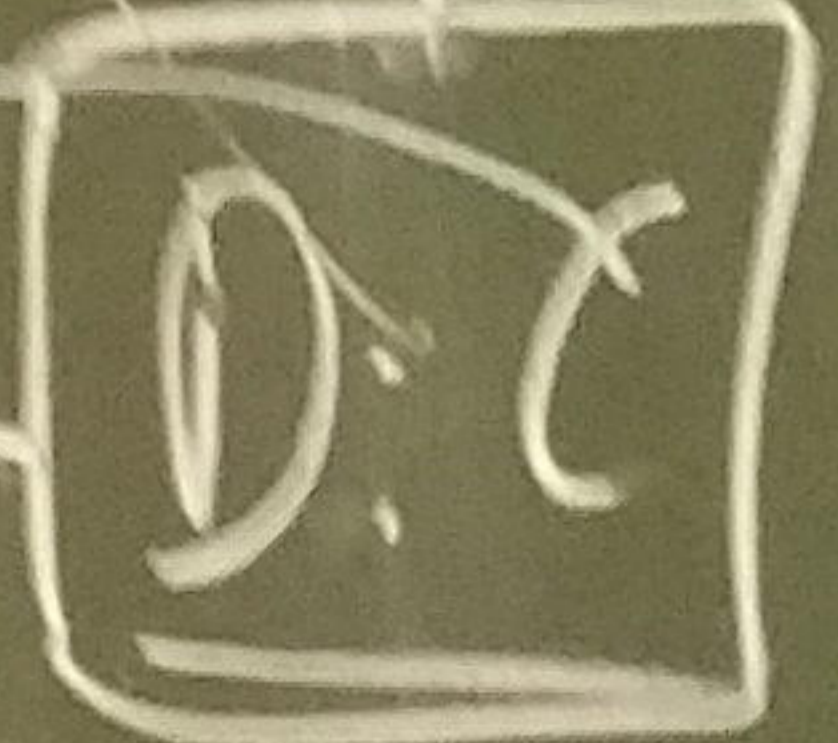
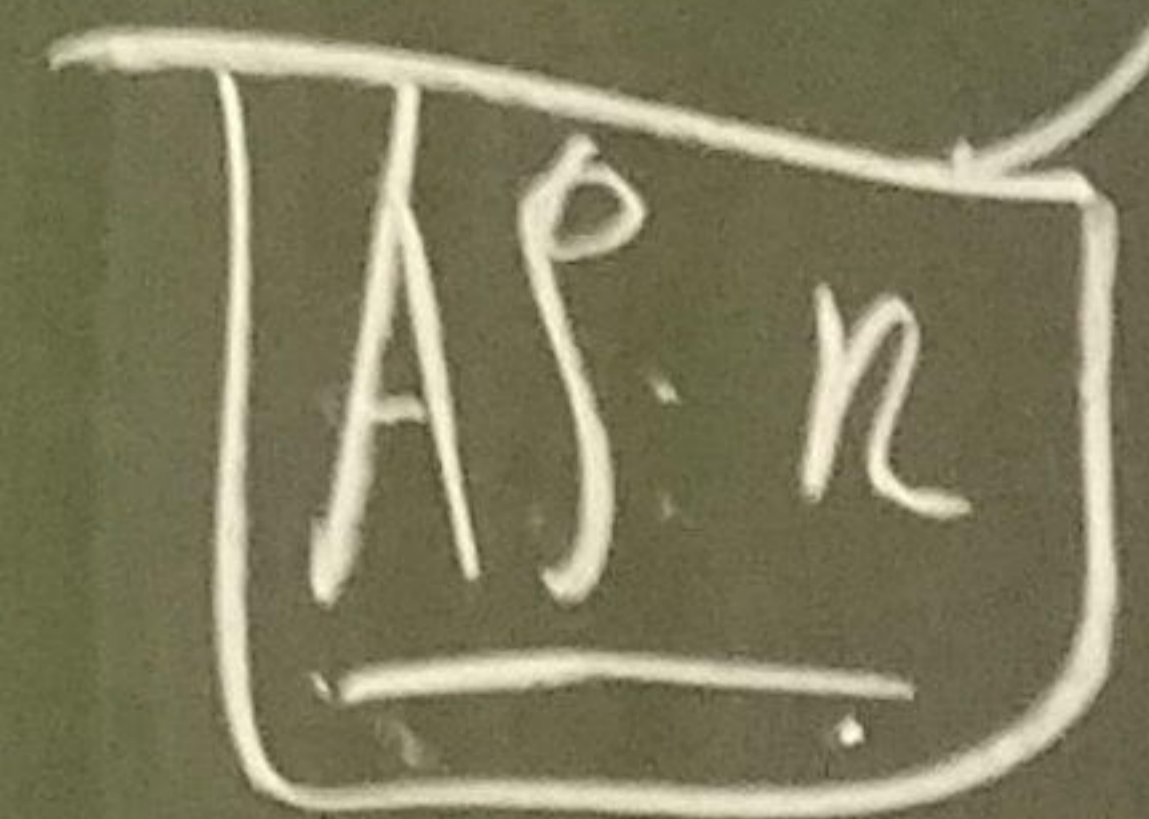
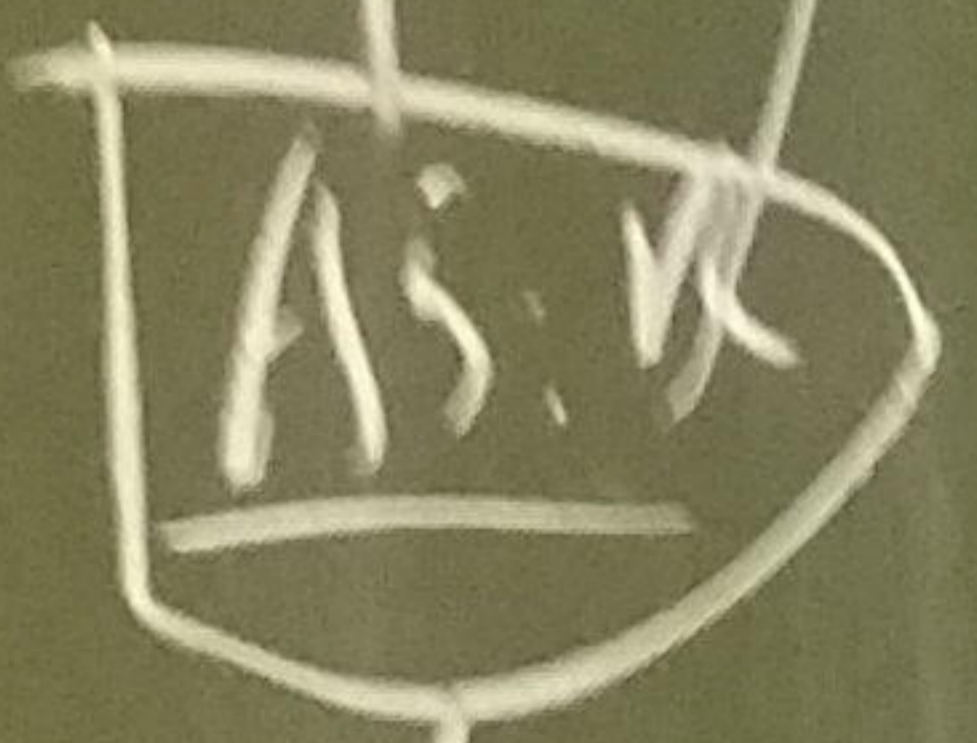
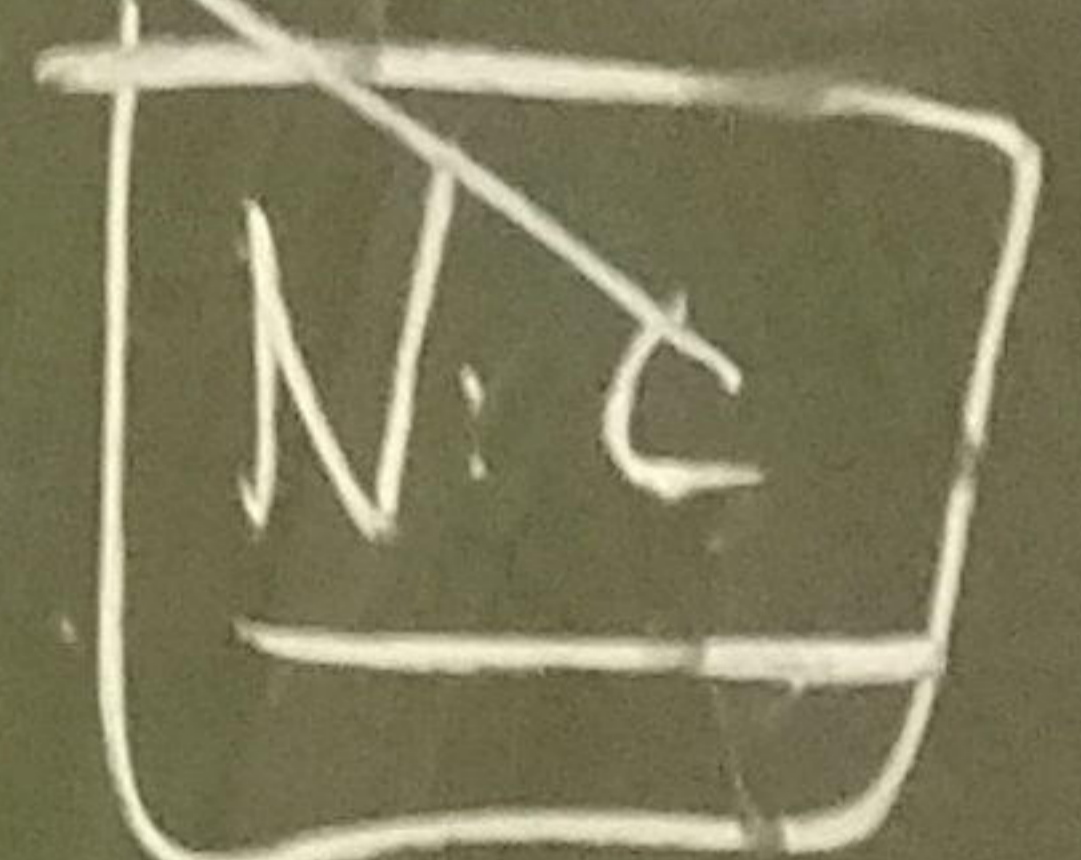
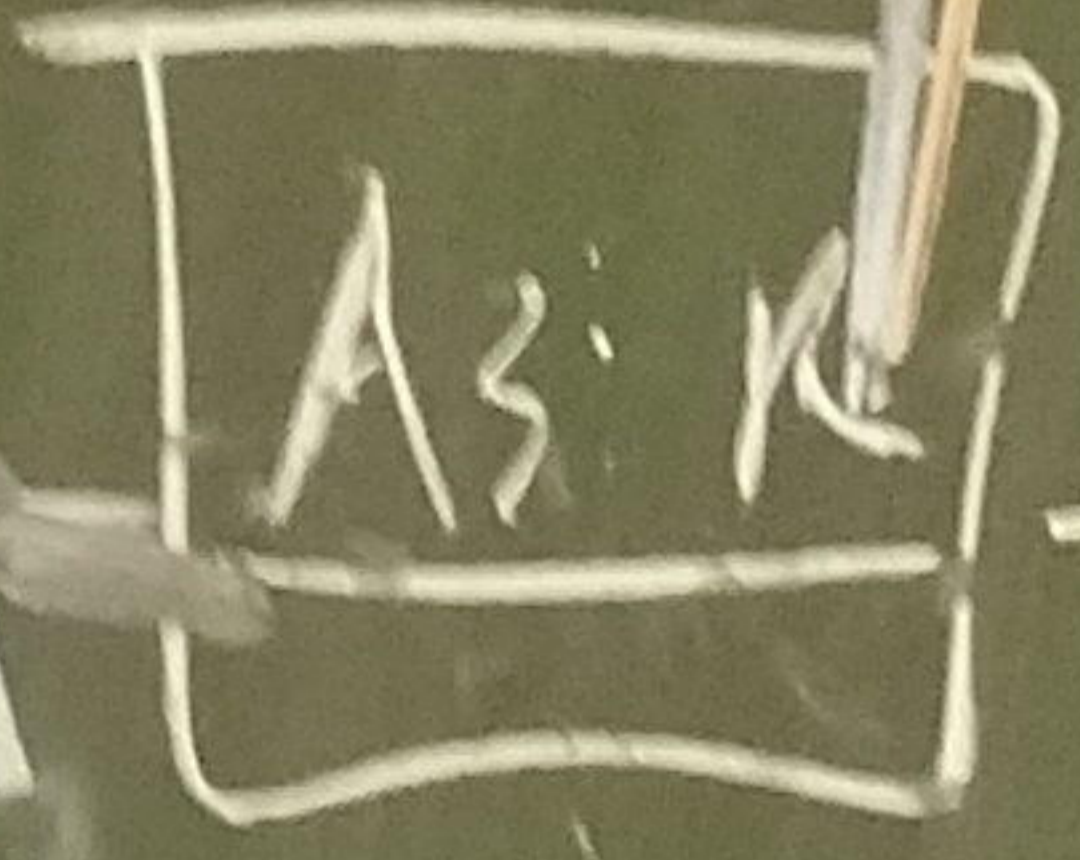
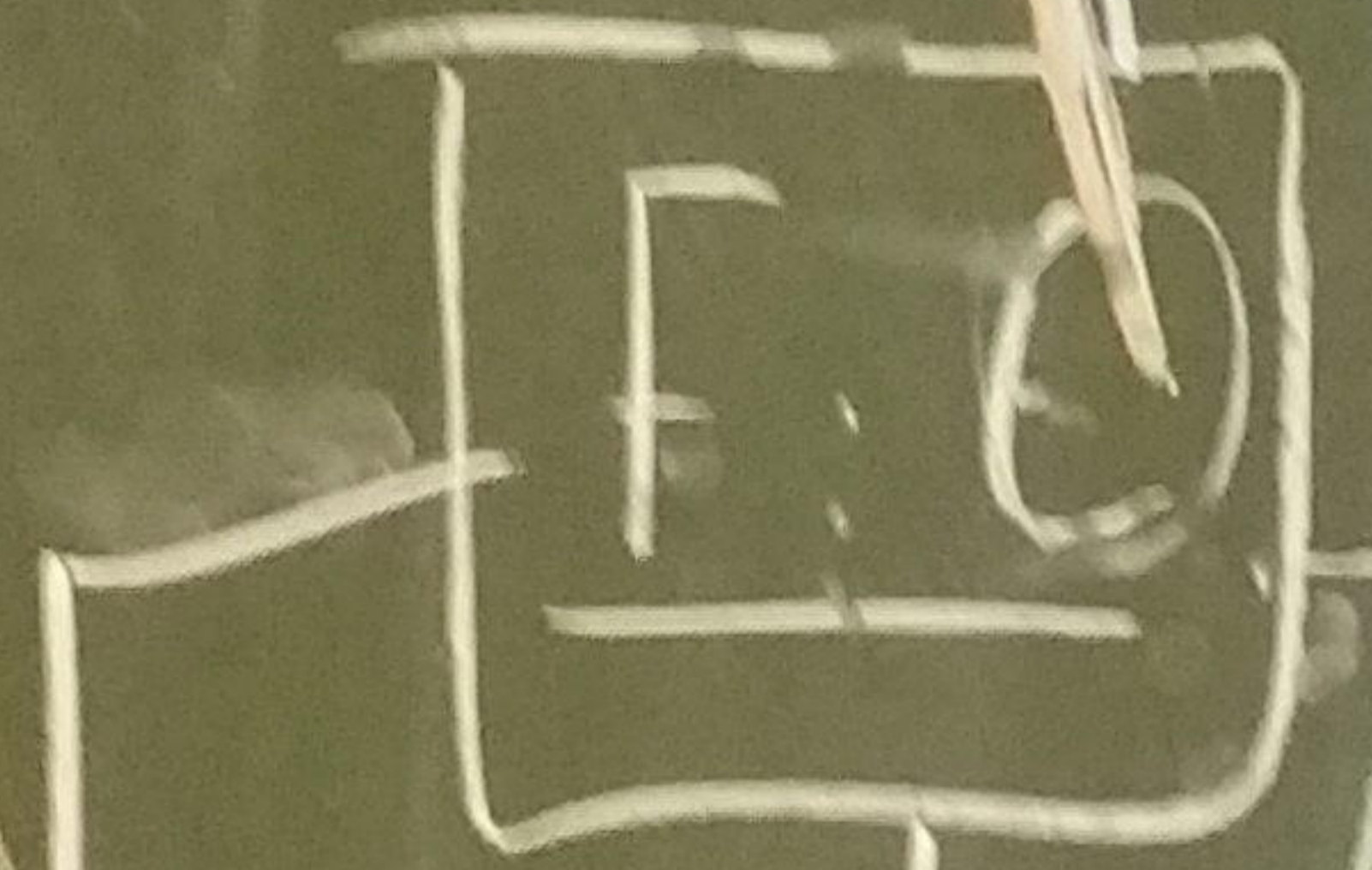


M L

CONSTRAINTS

ASSOCIATION

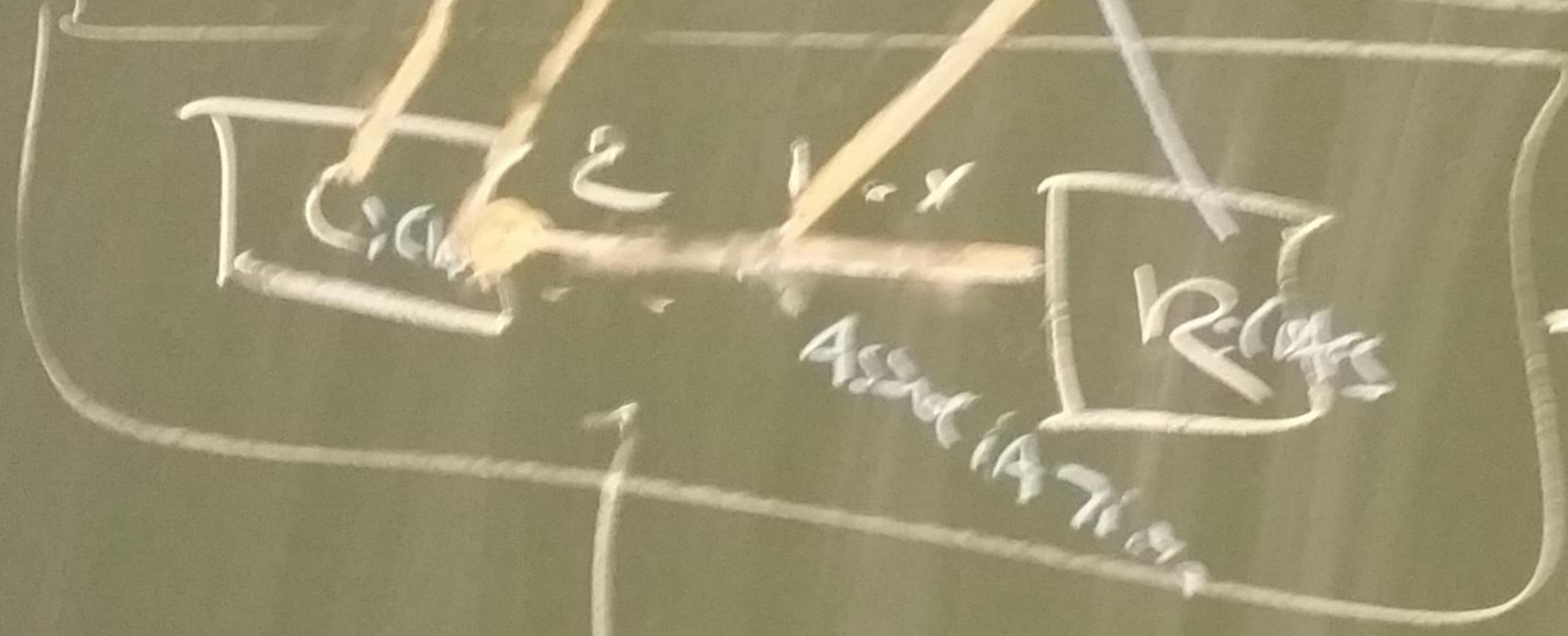
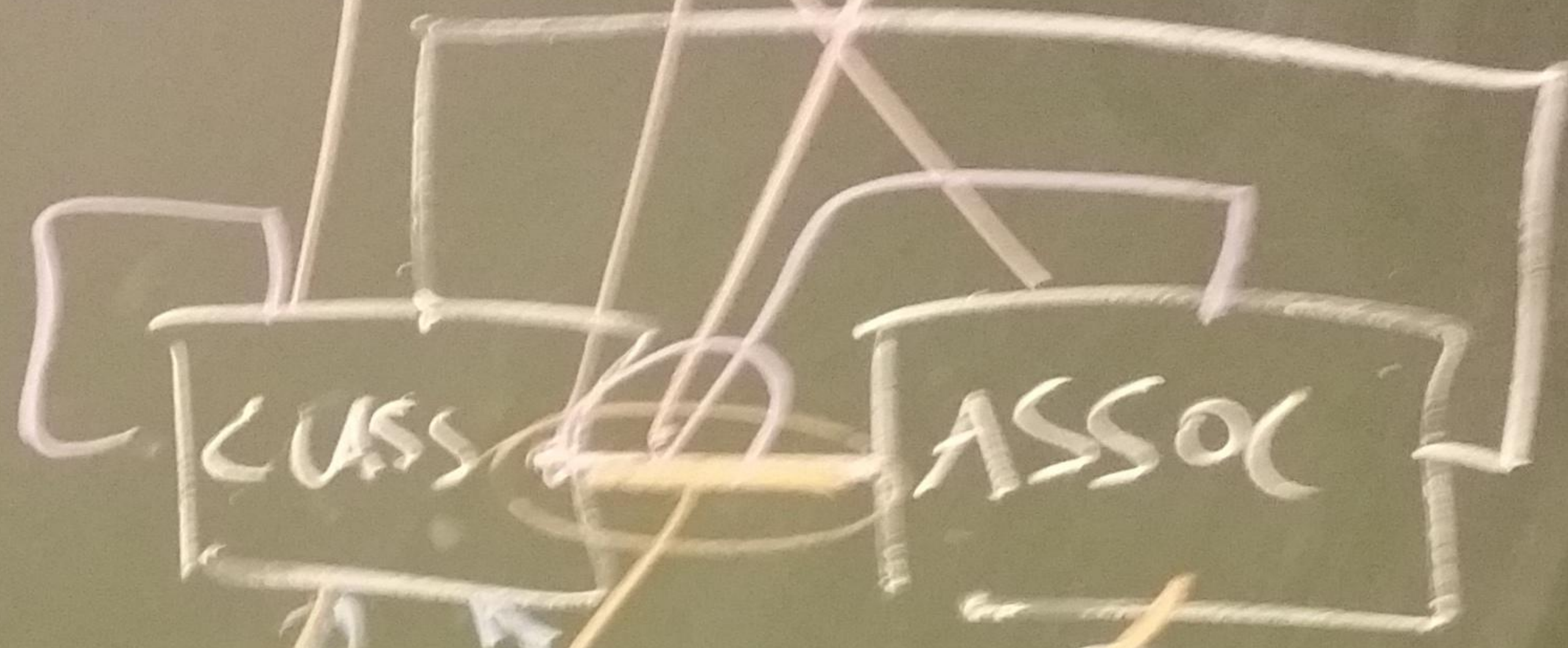
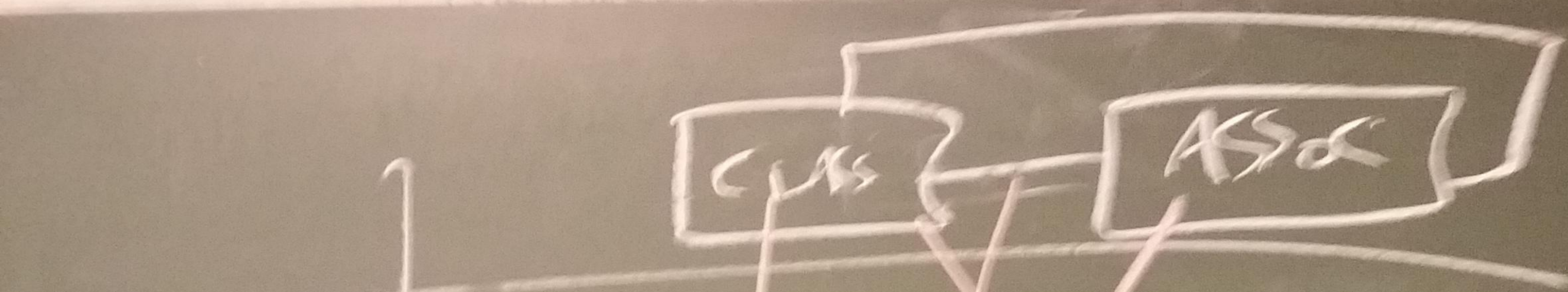
CLASSES



LINK

ASSOCIATION

(X)

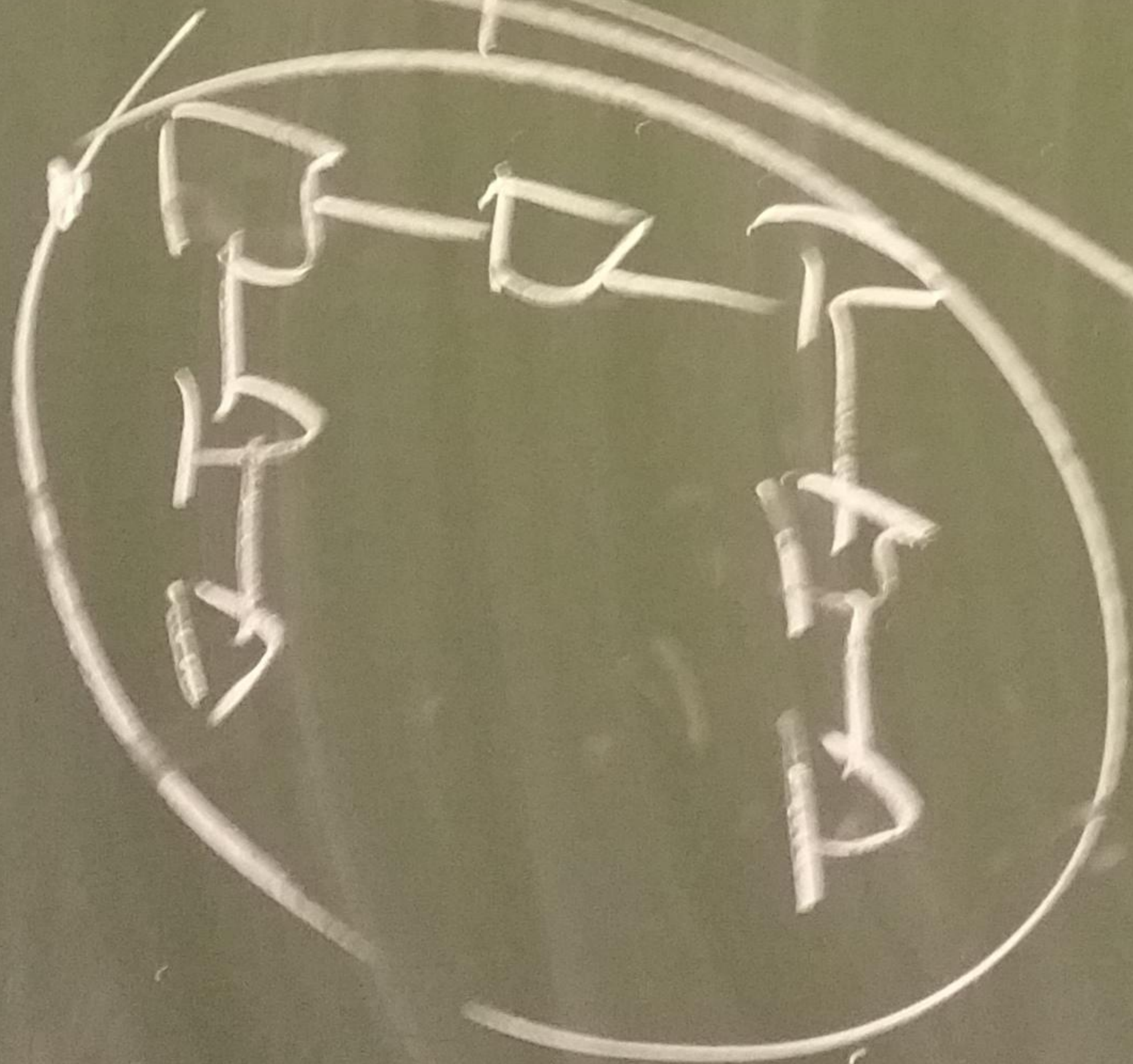


META-CALCULABILITY

MM(L)

GRAMMA

L(GME)



PROGRAM ::=

'BEGIN' STMTS 'END'

STMTS ::=

STMT *

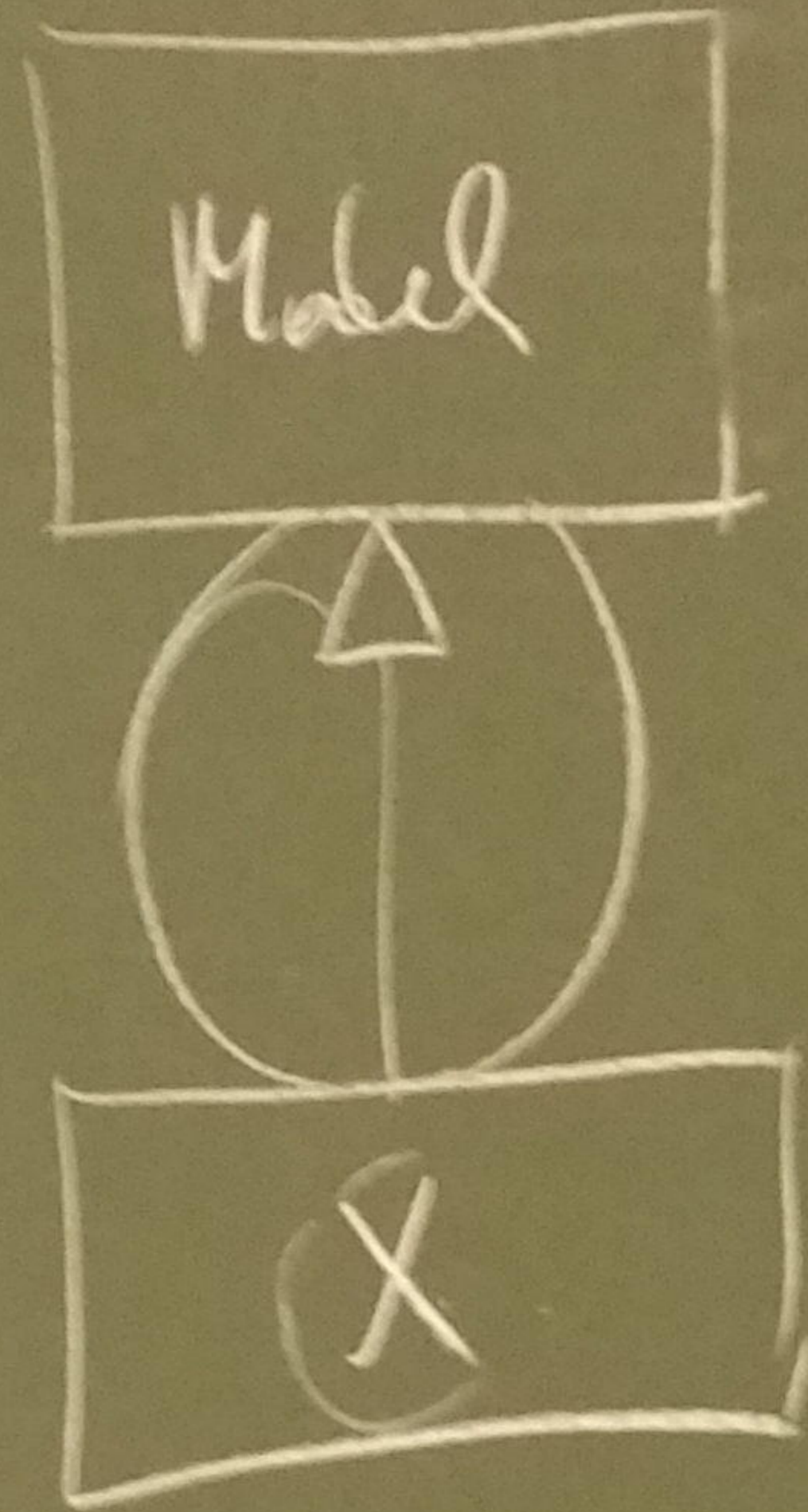
STATEMENT ::=

LHS '=' RHS

LHS :-

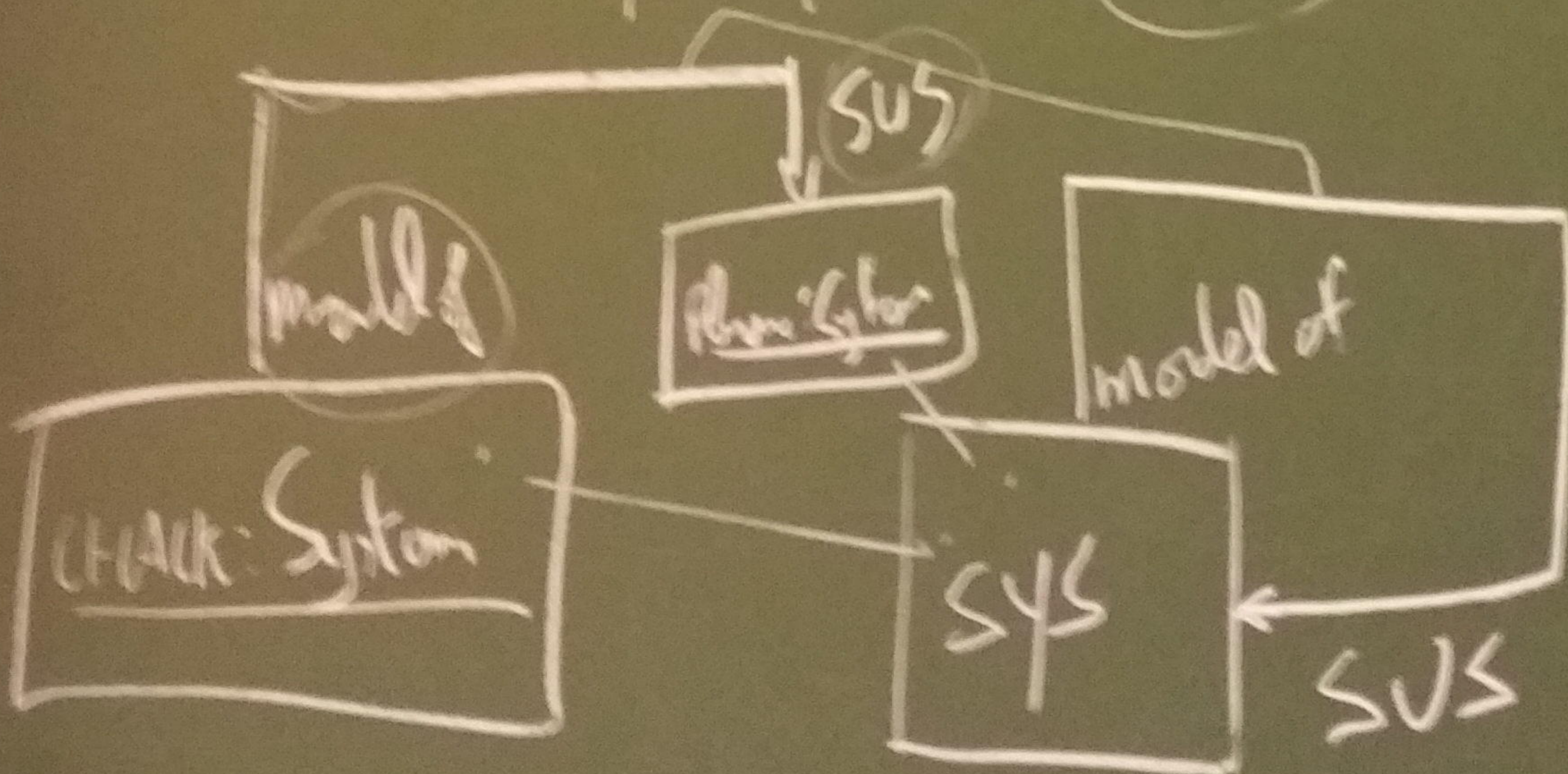
JEAN BÉZIVIN

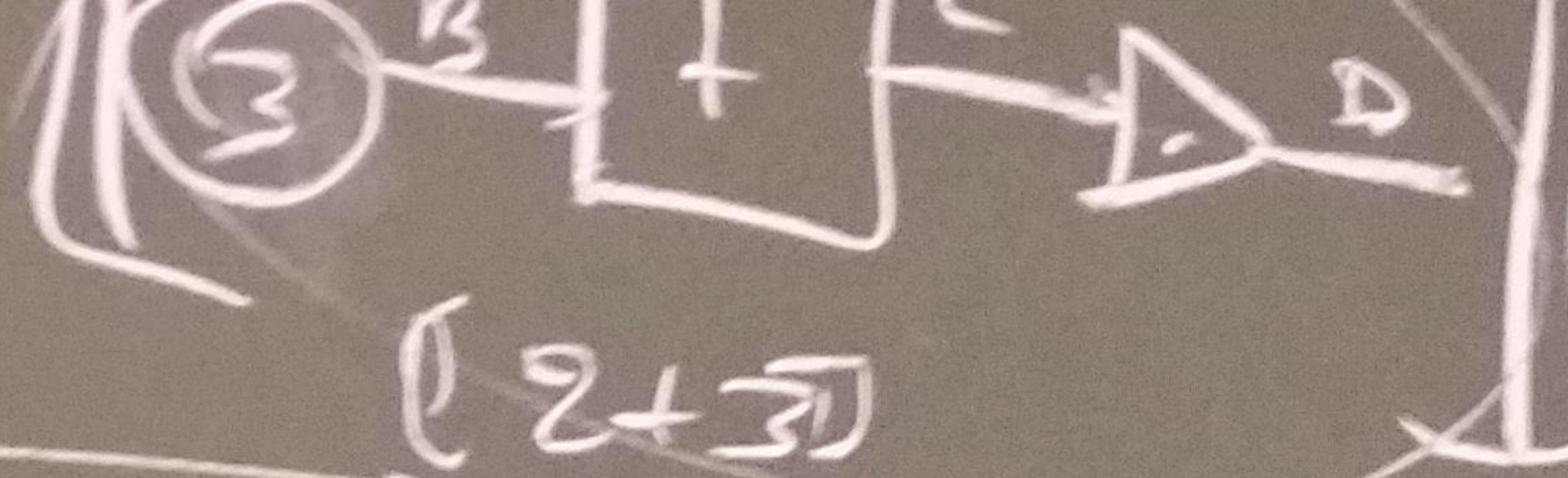
"EVERYTHING IS A MODEL"



JÉAN-MARIE FAURE

"NOTHING IS-A MODEL"





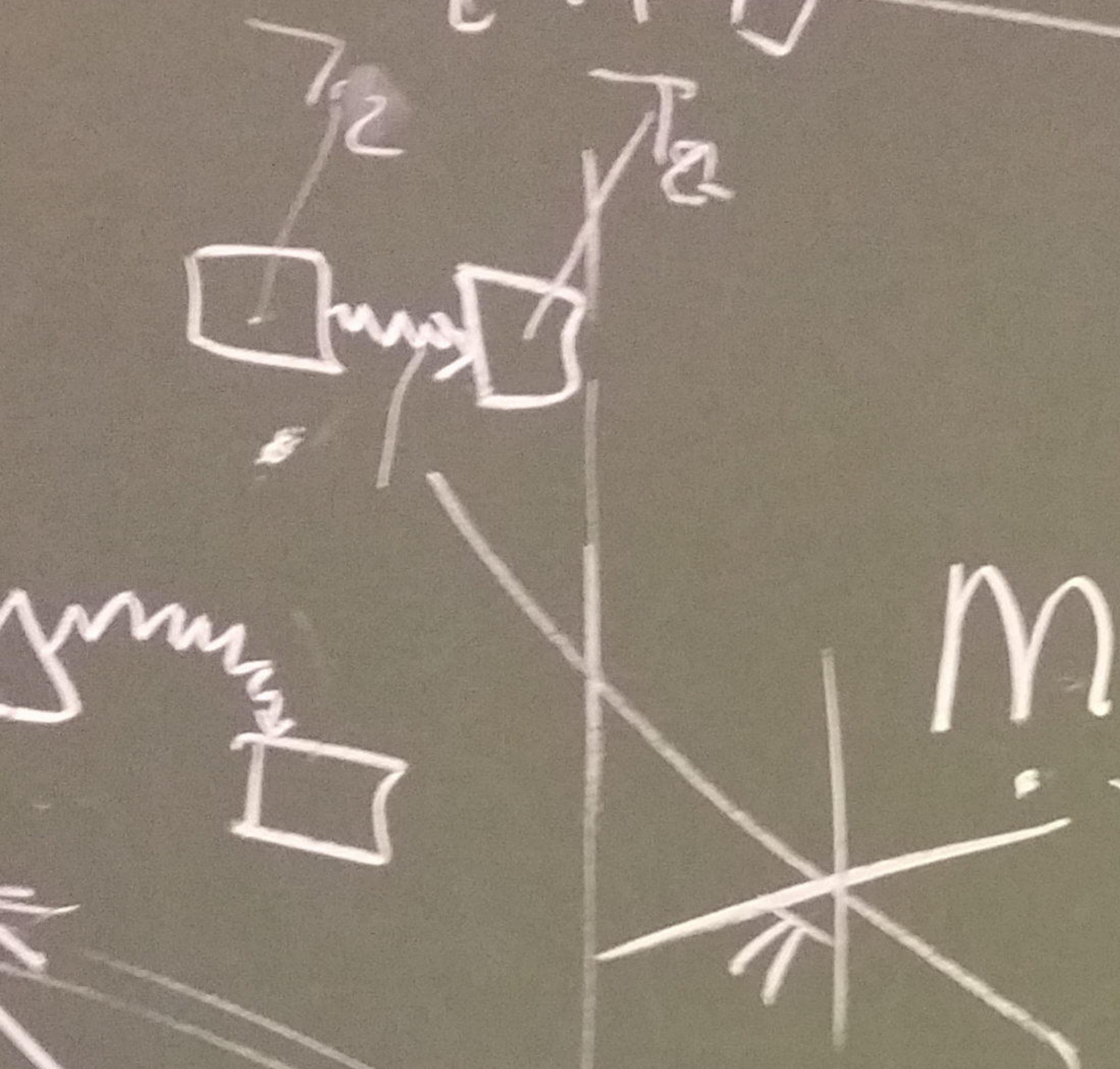
$$A, B, C, D \in \mathbb{R}$$

$$C = A + B, D = -C$$

~~$$A, B, C, D \in \mathbb{R}$$

$$A = B = C = D = \phi$$~~

$$\begin{array}{r} (2+3) \\ (1+4) \end{array}$$

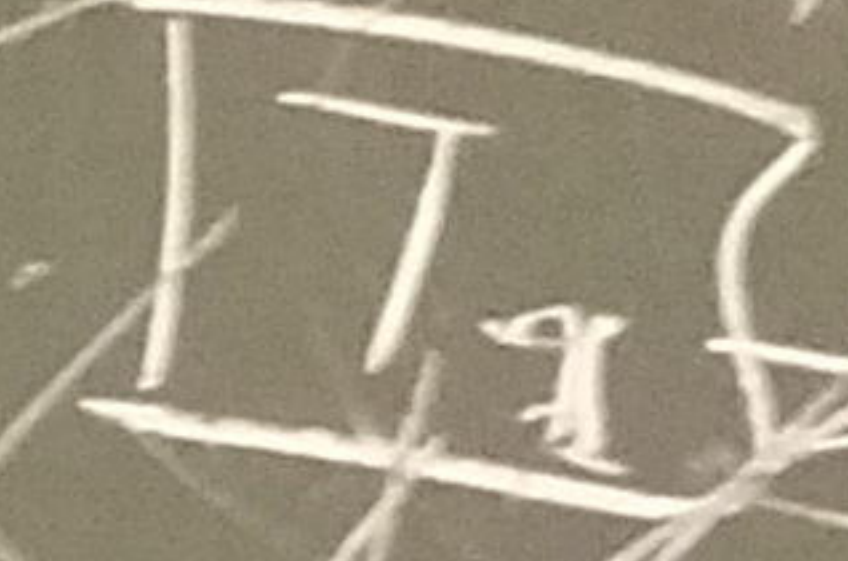


REALIZATION

SPECIFIED BY

CONSTRAINTS

M_1

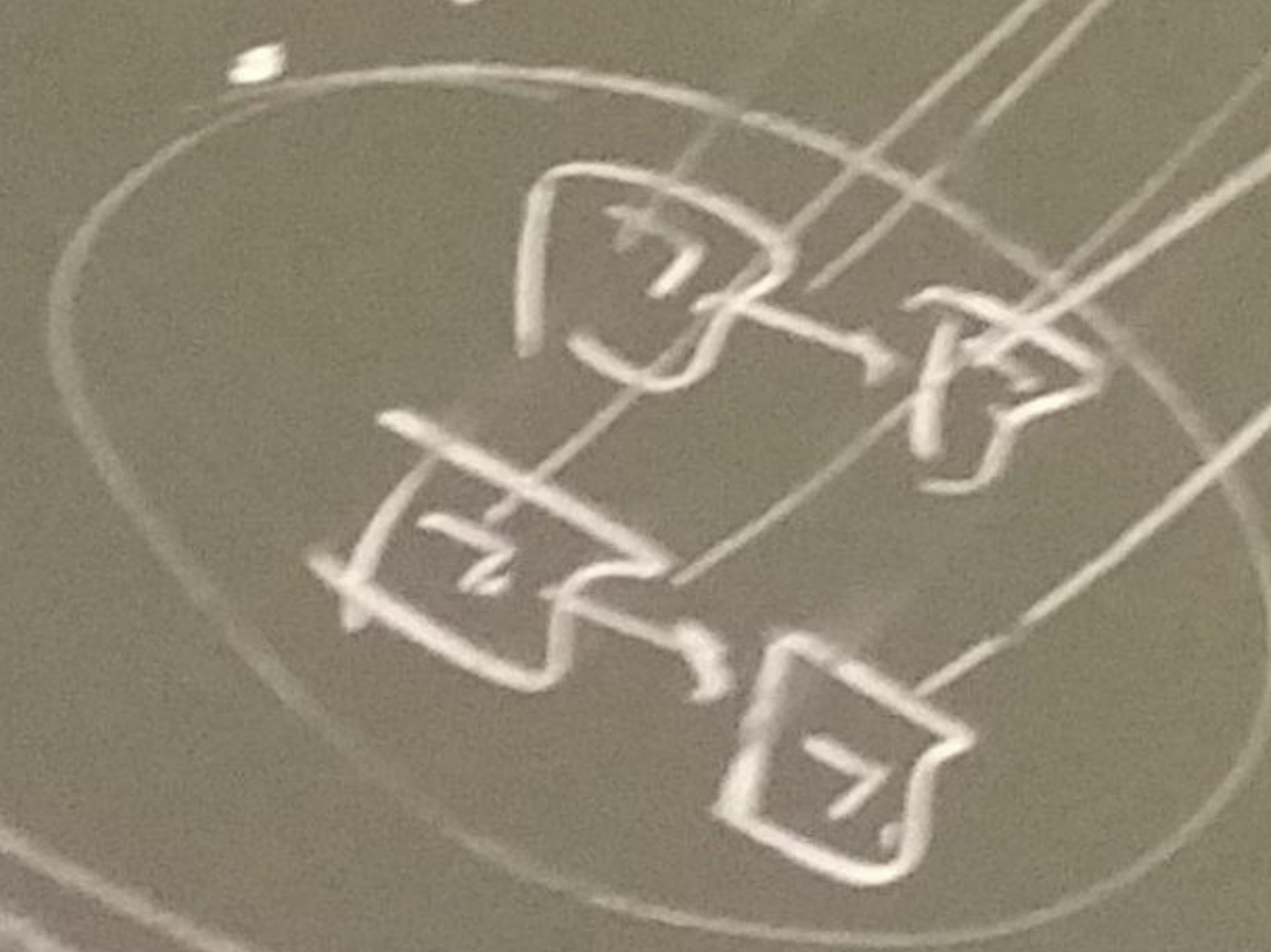


CONFORMS TO

M



$[m]$



M''

AST
ASG

ABSTRACT
SYNTAX

CONCRETE SYNTAX

PROG

TRACE SEMANTICS

```

    ① SUM = 0
    ② For i in 1..3:
    ③   SUM + = i
  
```

SUM	UK
i	UK

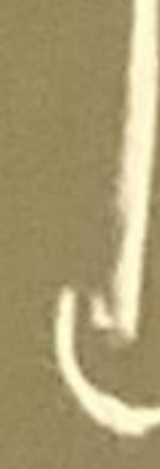


"SNAPSHOT"

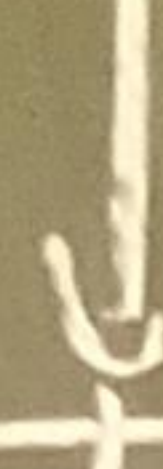
SUM	φ
i	UK



SUM	φ
i	1



SUM	1
i	1



SUM	1
i	2

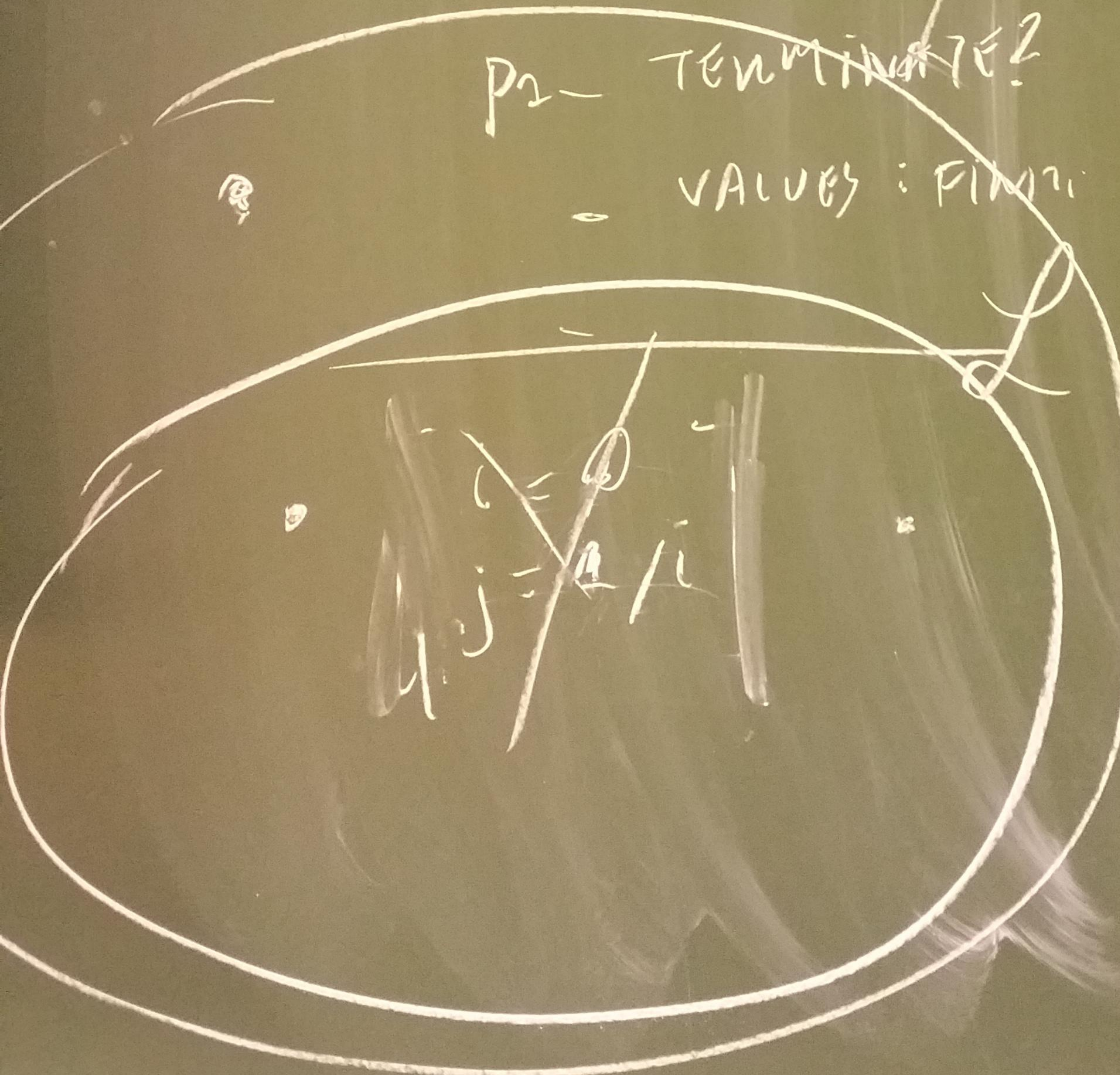
STATIC
DYNAMIC

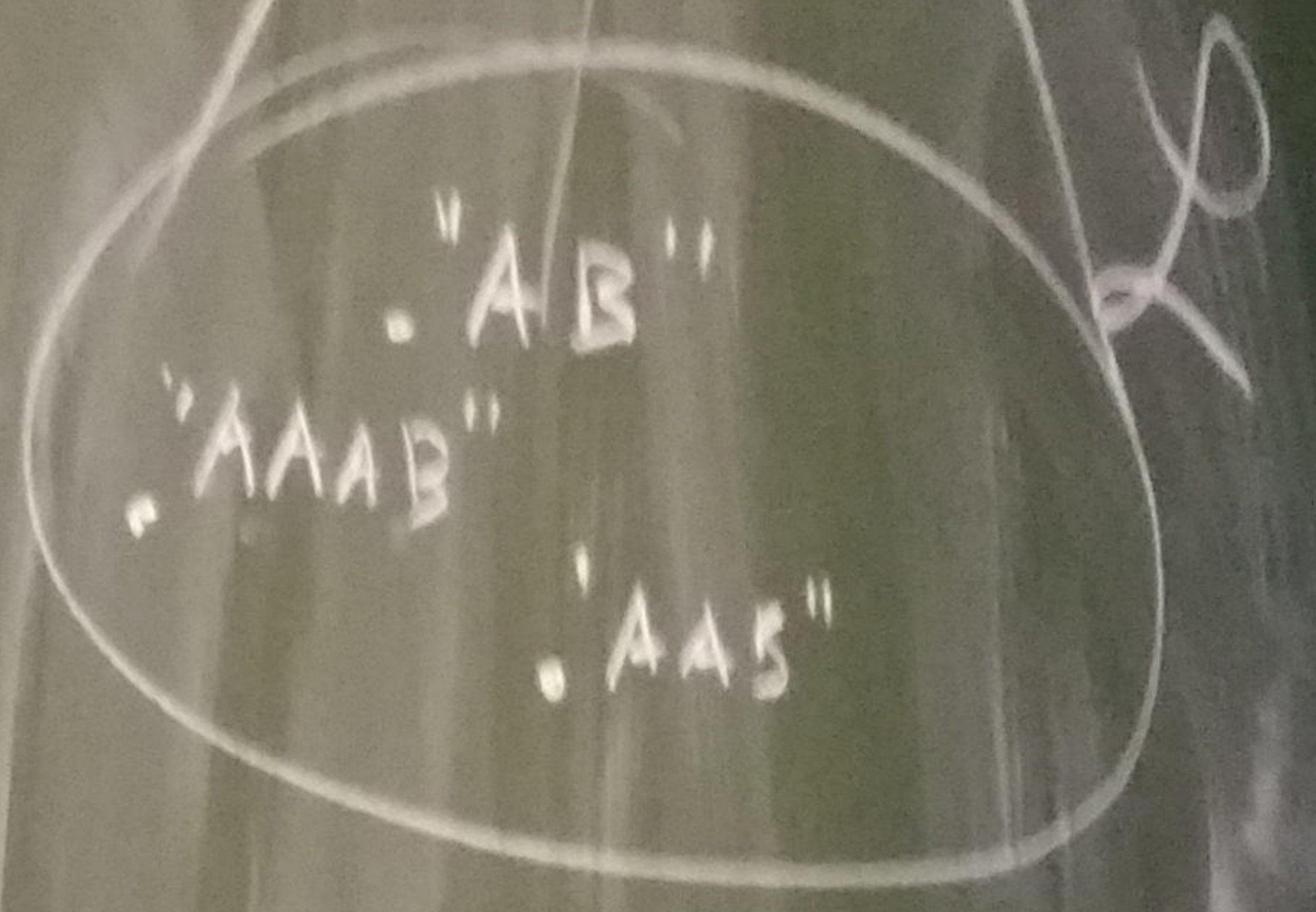
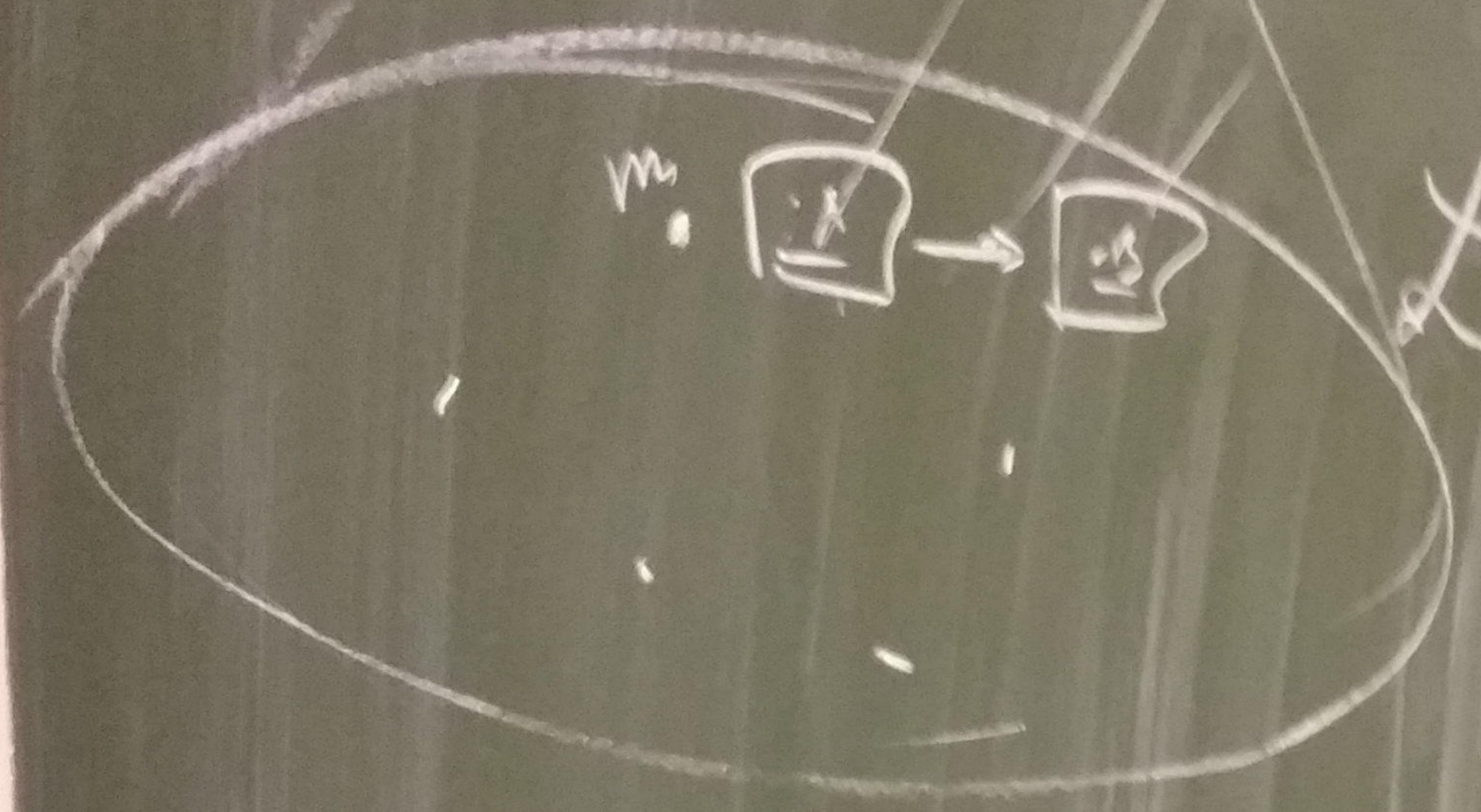
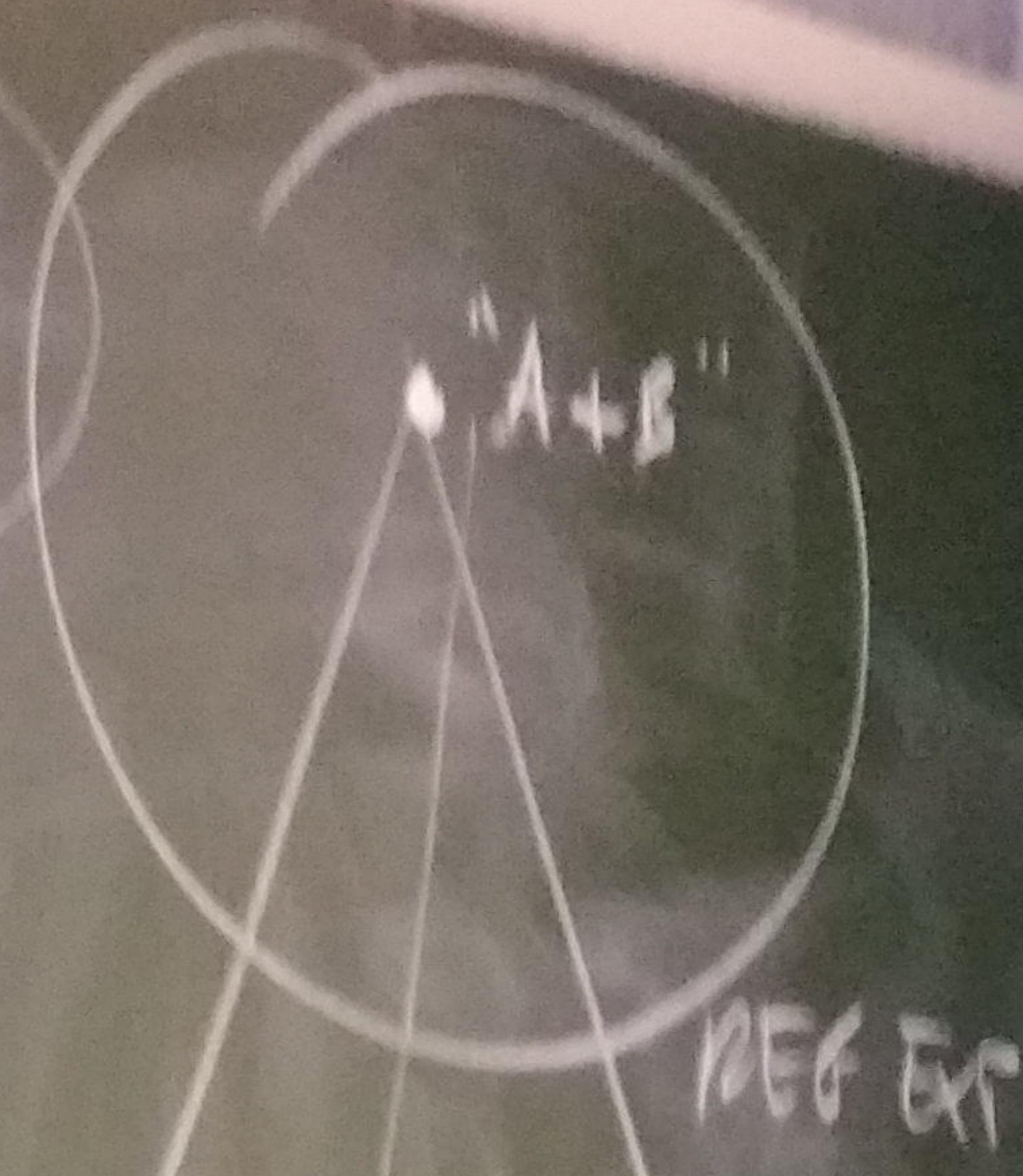
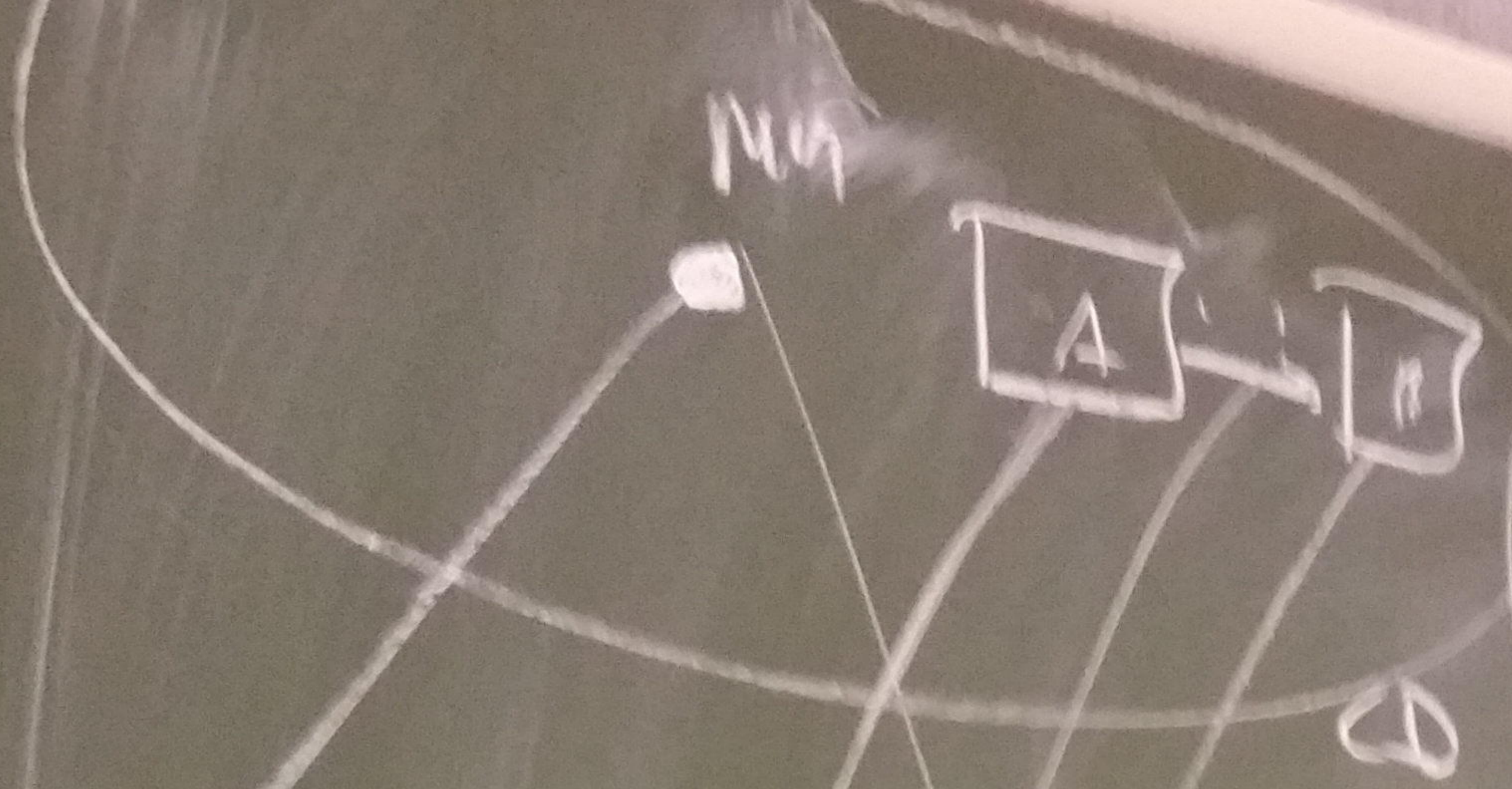
PROG \models P_1
?

PROPERTIES

P_2 - TERMINATED?

VALUES: FINITE



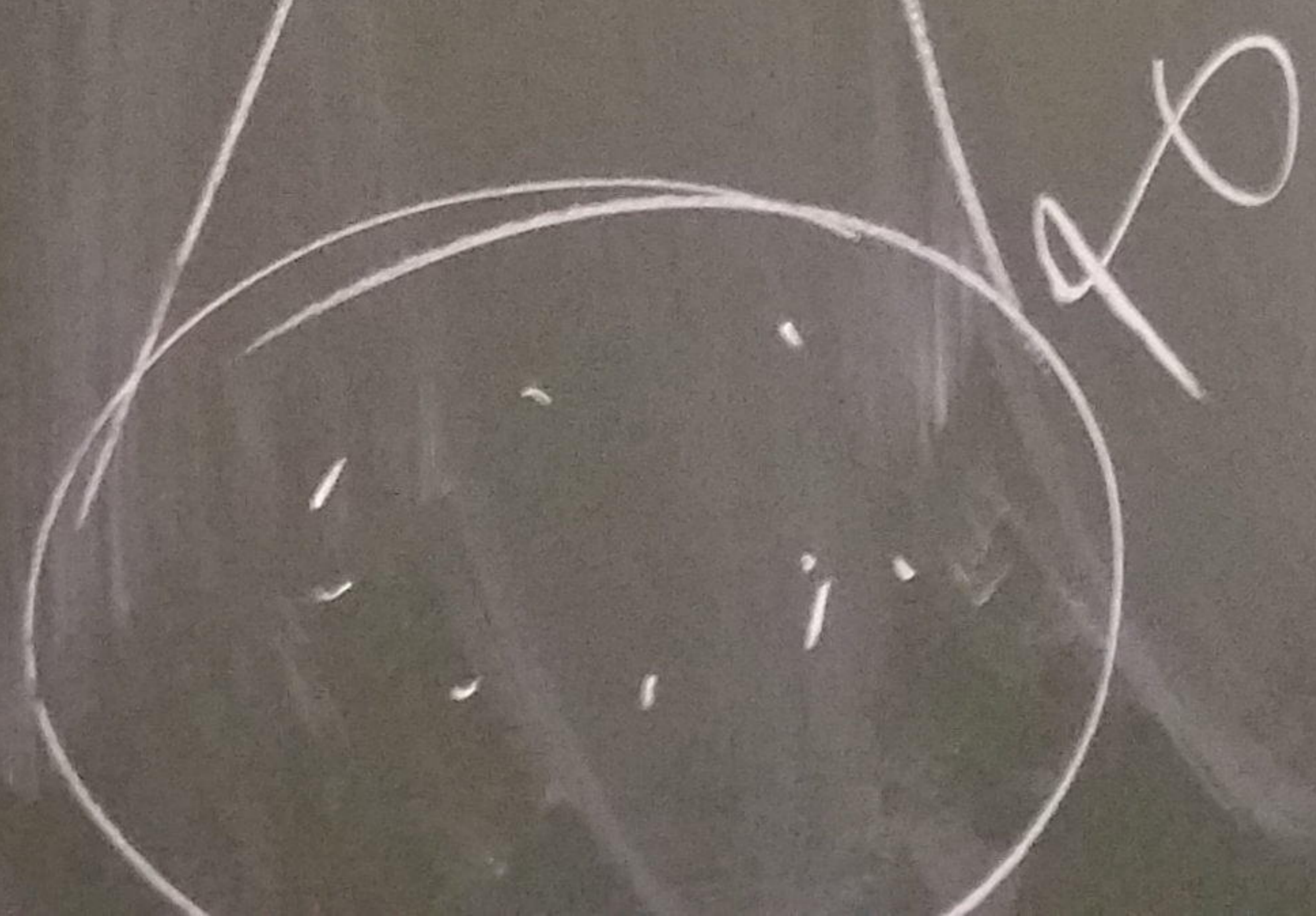
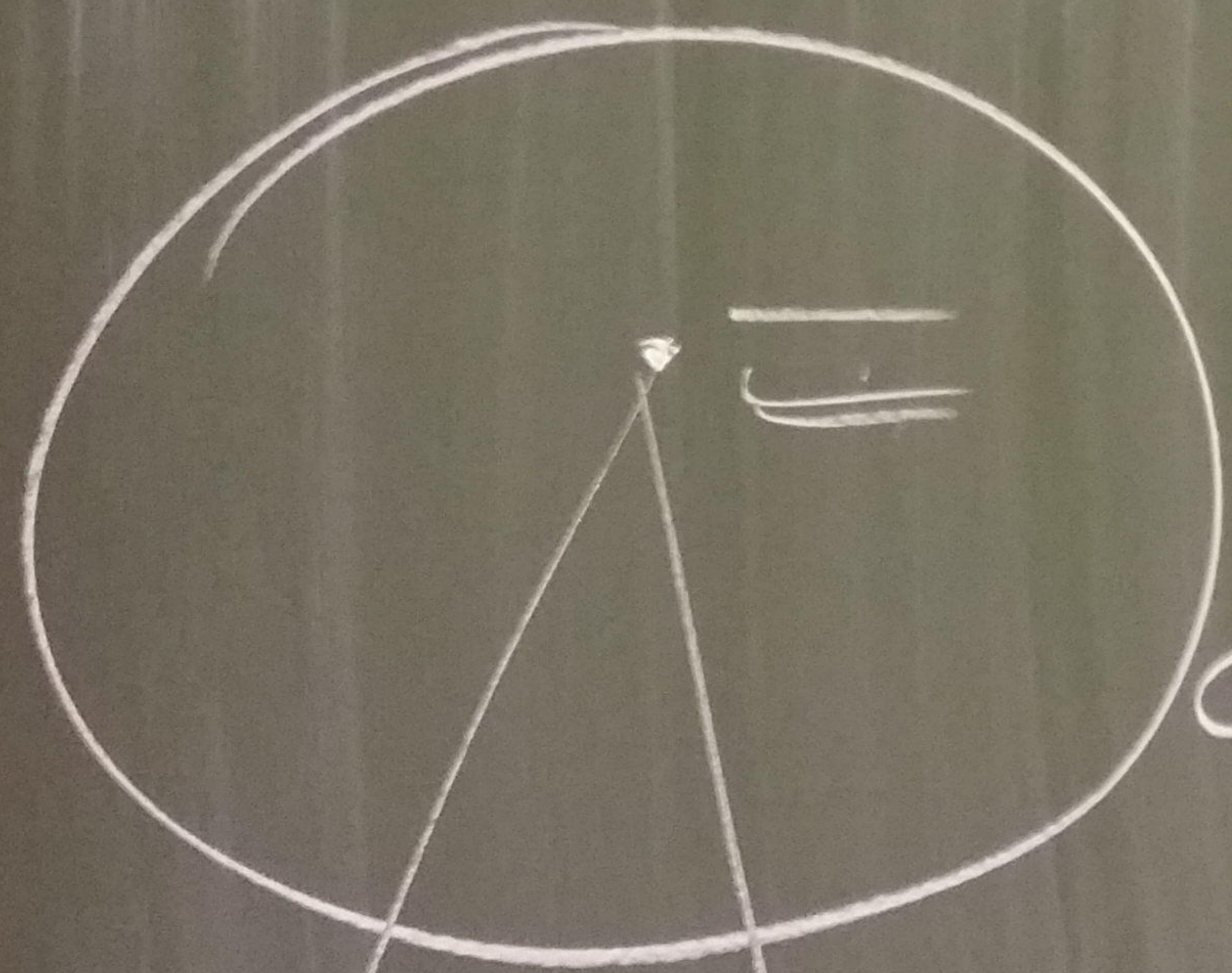


$$L = \{ 'AB', 'AAB', 'AAAB', \dots \}$$

$$\neg (A \Rightarrow B)$$

GRAMMAR $\neg (\neg A \vee B)$

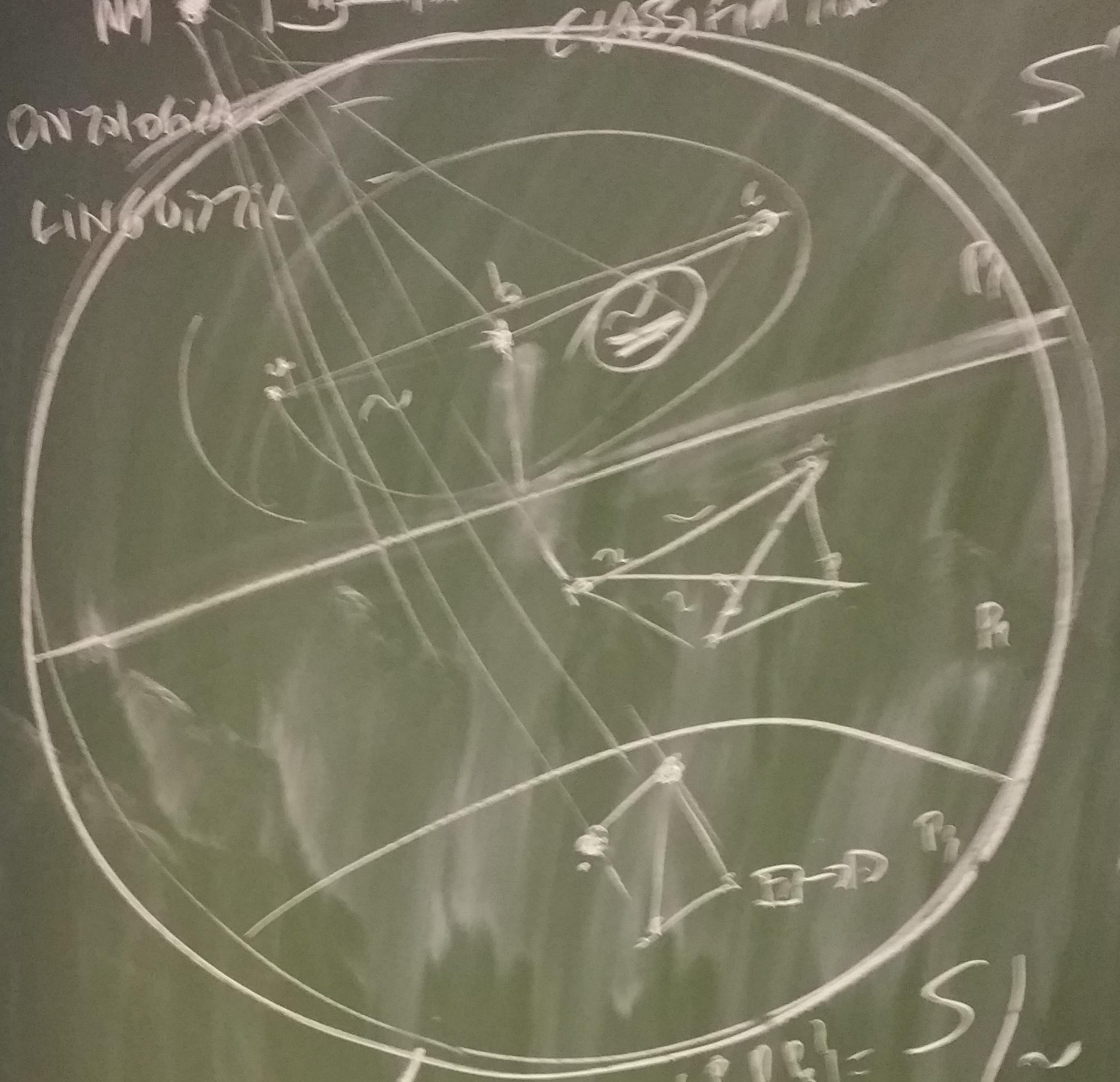
$$A \wedge \neg B$$



PARTIAL CLASSIFICATION

NY → D → D

I. ONTOLOGICAL
I. LINGUISTIC



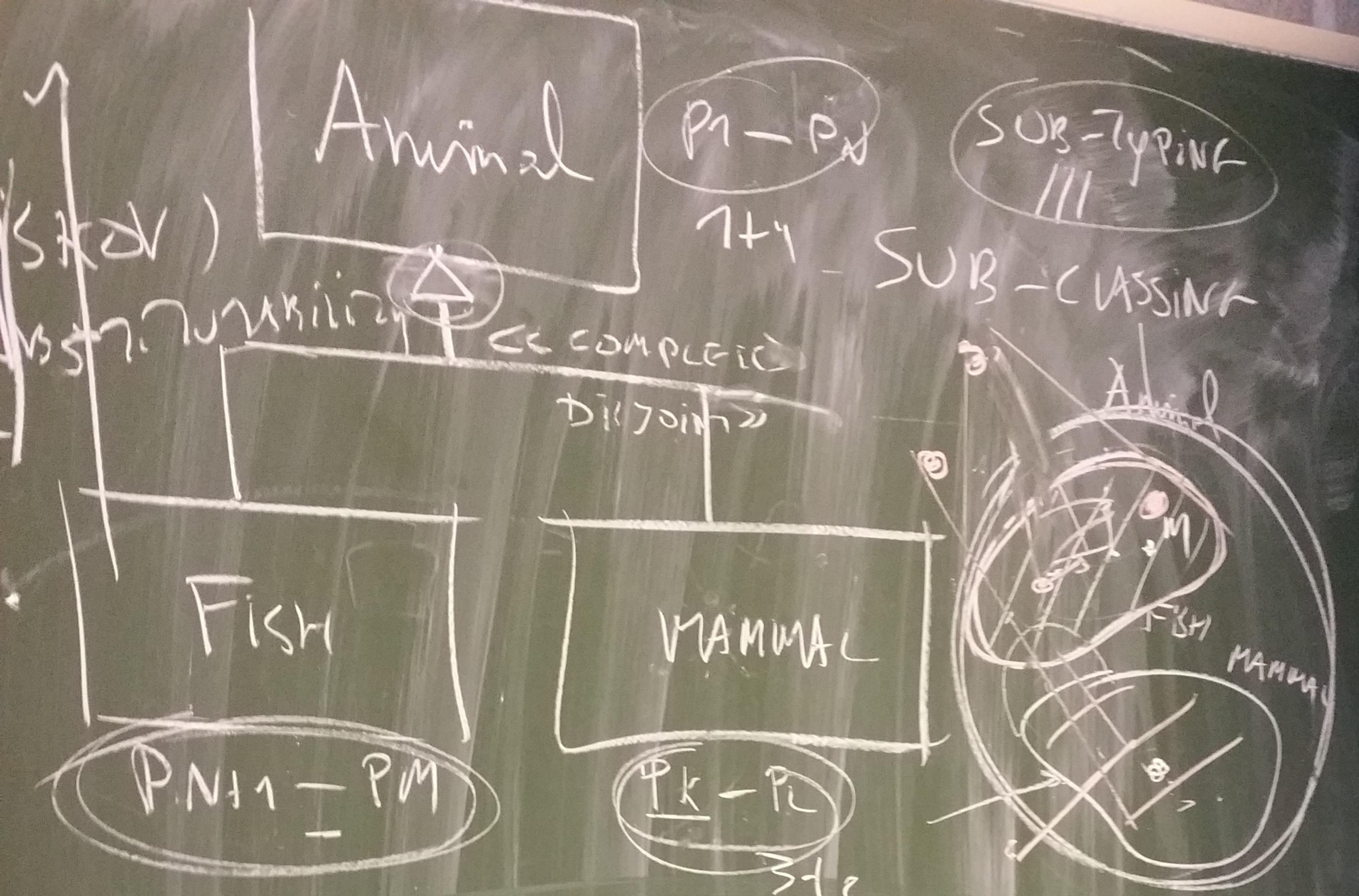
1/2 = S/2

EXTENSION

INTENSION

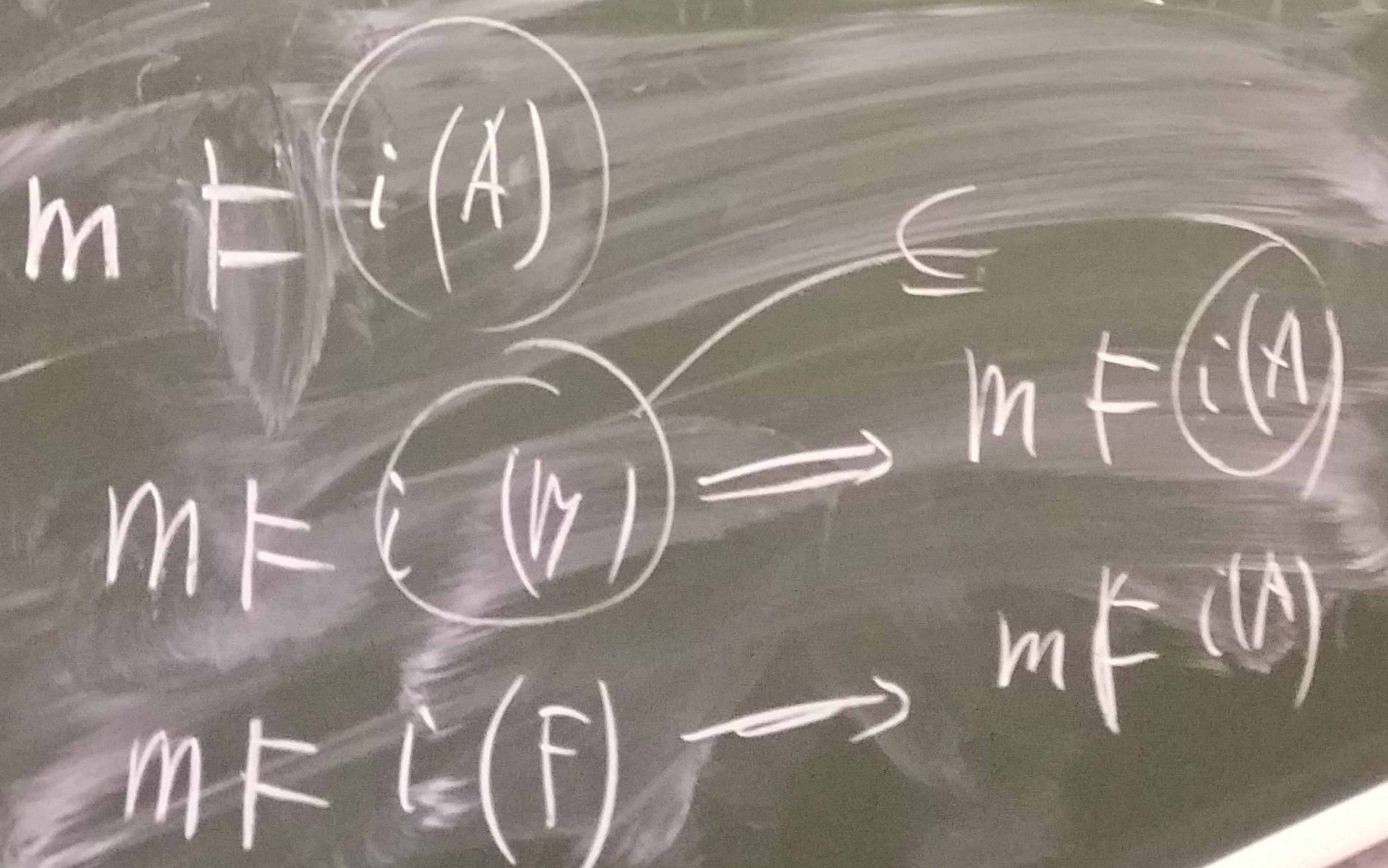
→
→
→

Ⓟ | p p p p



$$\mathcal{E}(F) \subseteq \mathcal{E}(A), \mathcal{E}(M) \subseteq \mathcal{E}(A)$$

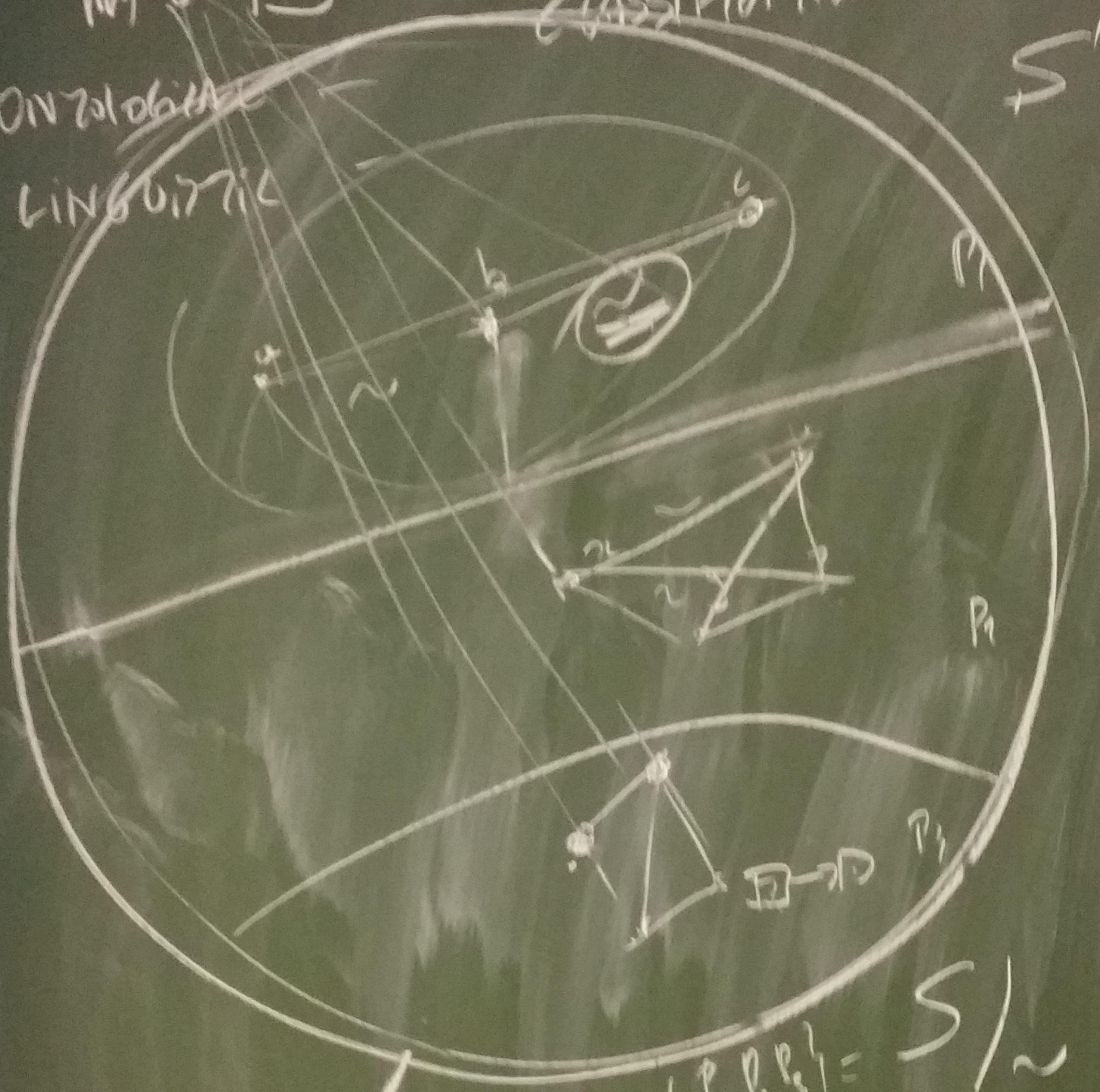
$$\mathcal{E}(A) = \mathcal{E}(F) \cup \mathcal{E}(M)$$



NM • [] → []

PARTITIONING CLASSIFICATION

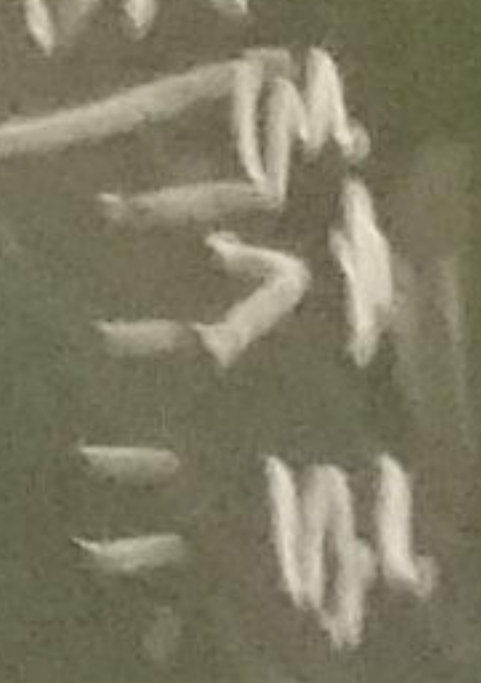
- I. ONTOLOGICAL
- II. LINGUISTIC



$$\{P_1, P_2, P_3\} = S/\sim$$

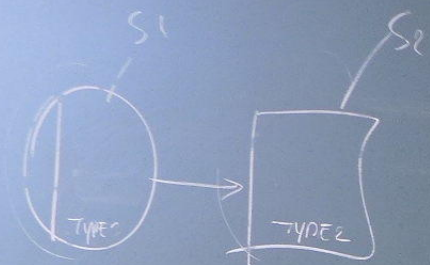
EXTENSION

INTENSION

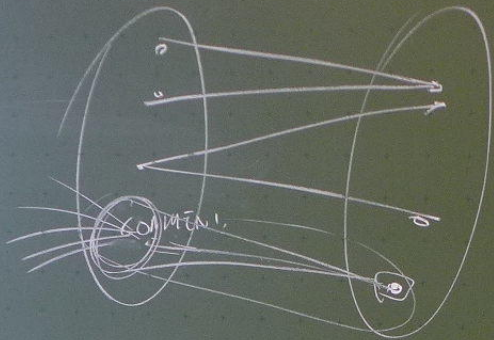


$$\textcircled{P} = \{P_1, P_2, P_3\}$$

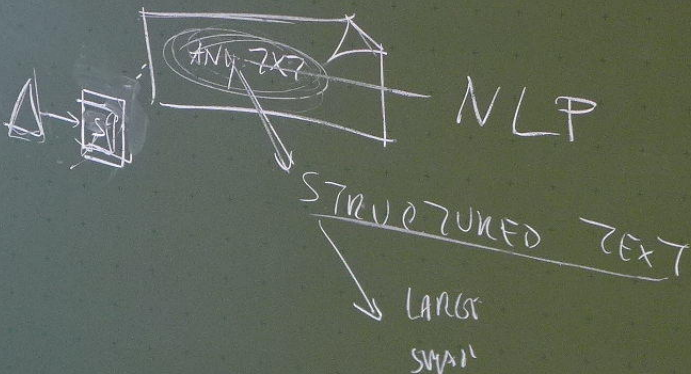
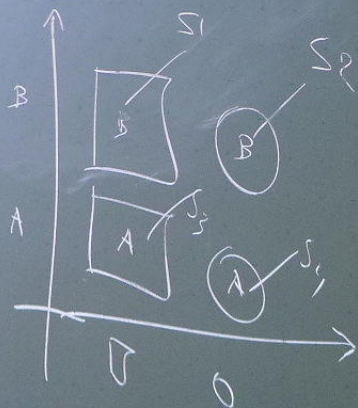
POPOD?



AS DSL VISUAL



x ADDITIVE
x MULTIPLICATIVE



SAFE C

~~WRITE TRUE~~

~~FOR~~

~~DO NOT USE COMMENTS~~

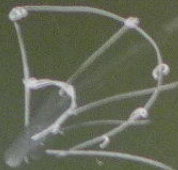
~~int i = 0; A u g y~~

~~[2,4] < int i = 0;~~

~~if (-2 <= i <= 4):
EX...~~

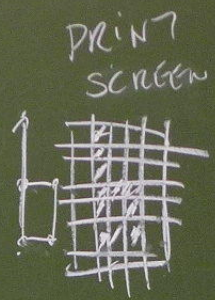
(-2, 4) * /

CON?



ABC
 ELLIOTT
 NAME

SBP



CHARACTER

- ENCODING
- ASCII (TQ) SS
 - LATIN1 (TA) SF
 - UTF-8

CODE POINT

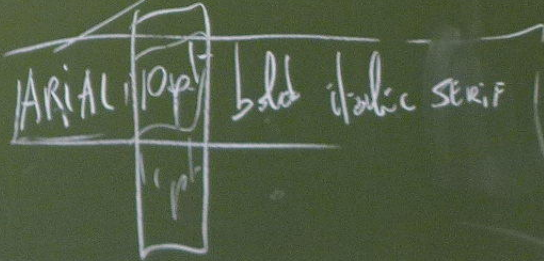
GLYPH

FONT

FAMILIES

9, 4) */

CONTEXT-DEPENDENT



Moody

CH1

CH2

G-1^F

G-2^F

Capital S

China

SIGNATURE
G-L

~~U~~

R

U

Capital = Kimmato

M

~~UL-10-12~~
~~U~~
~~U~~
~~U~~
~~U~~

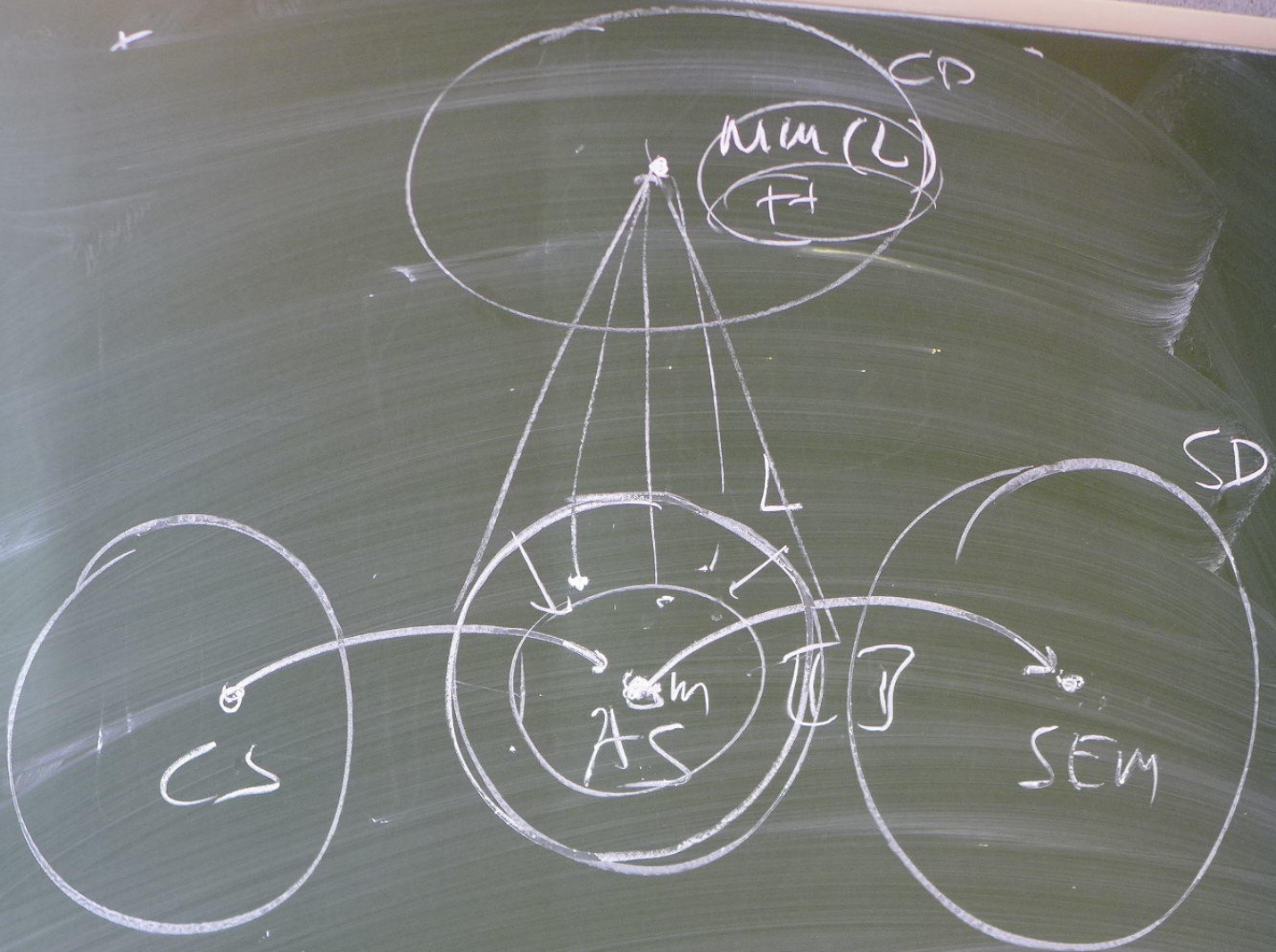
$$[\Delta] = \{1, 2\}$$

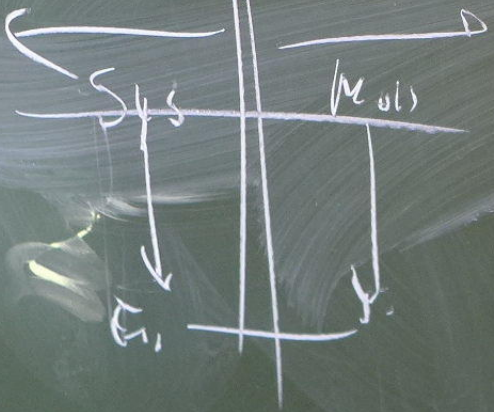
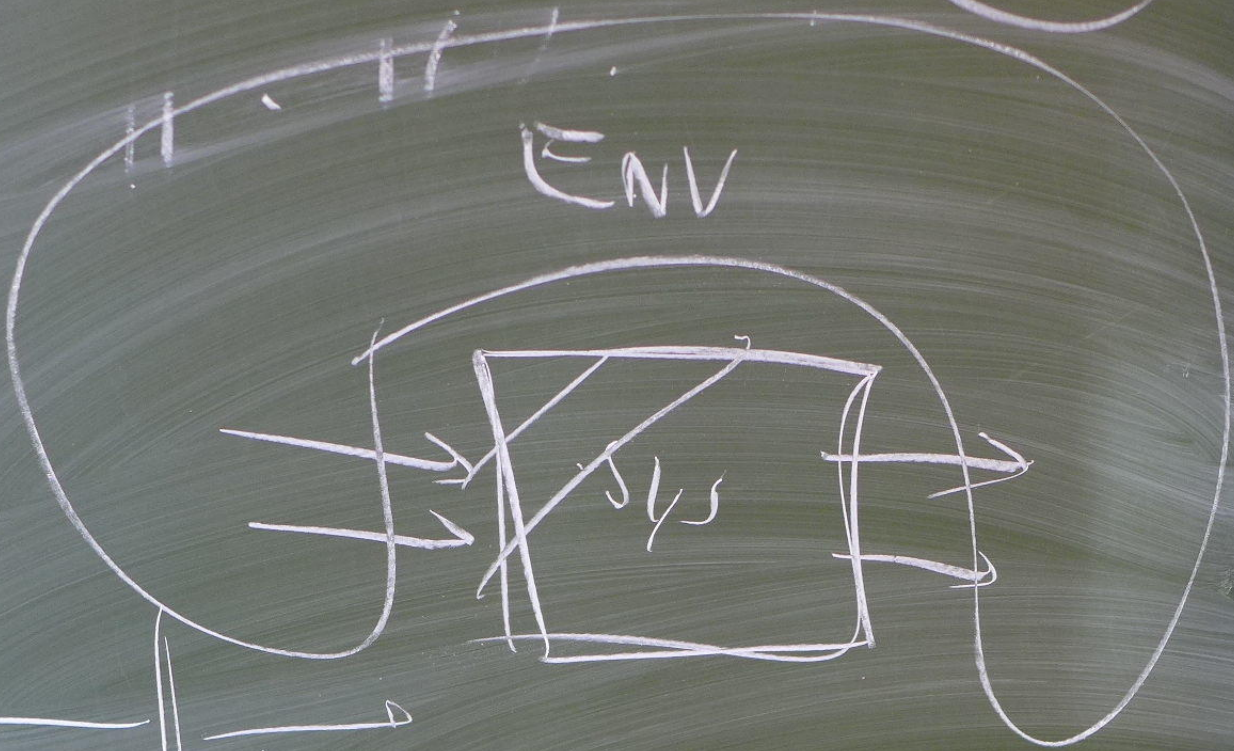
$$[B] = \{1, 2\}$$

$$[B, \Delta] \rightarrow \{2, 3, 4\}$$

$$P(s) = \{1, 2, 3, \dots, 1, 2, 3, 4, 5, \dots, 1, 2\}$$

2.5

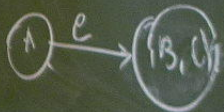
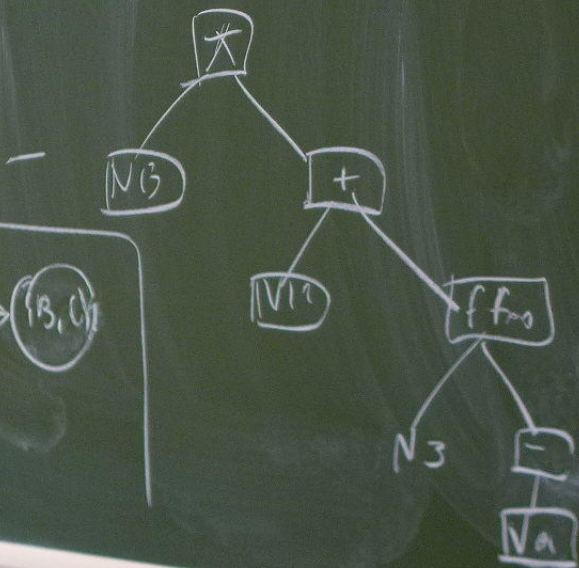




$$M(\mathbb{R} \rightarrow) = \begin{bmatrix} 0 & 0 \end{bmatrix} =$$

$$13 \times (12 + \text{foo}(3, -a))$$

~~$\in L$~~



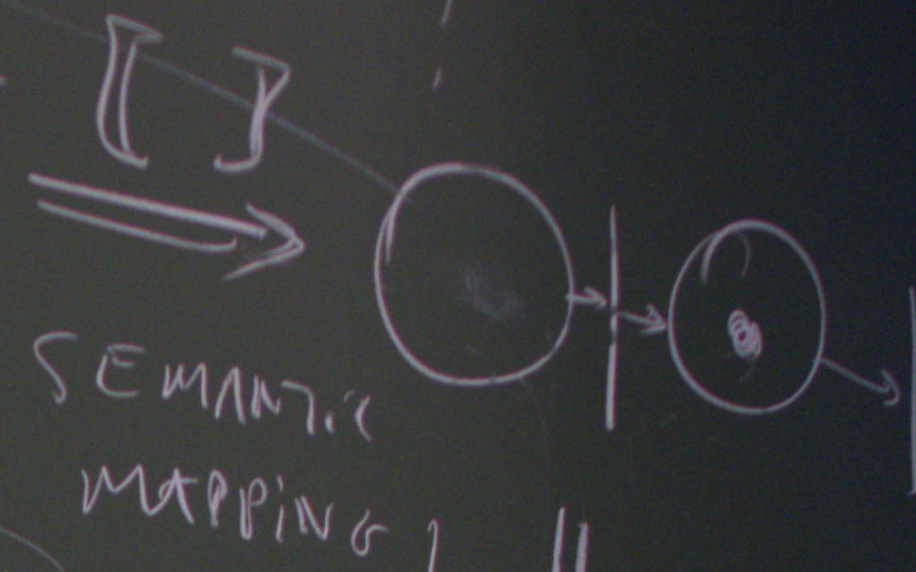


COLLISION

$$\exists t_2 : \#RC(t) > 1$$

MM RG

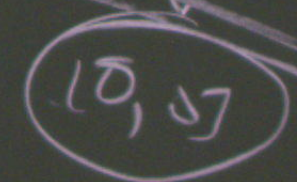
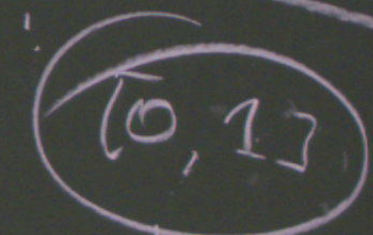
ANALYSIS



MIN PW

[]

ANALYSIS



MM Kalam

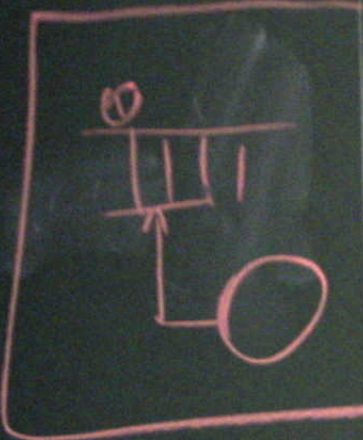
PROPERTY T/F

SATISFIED BY

MODEL?

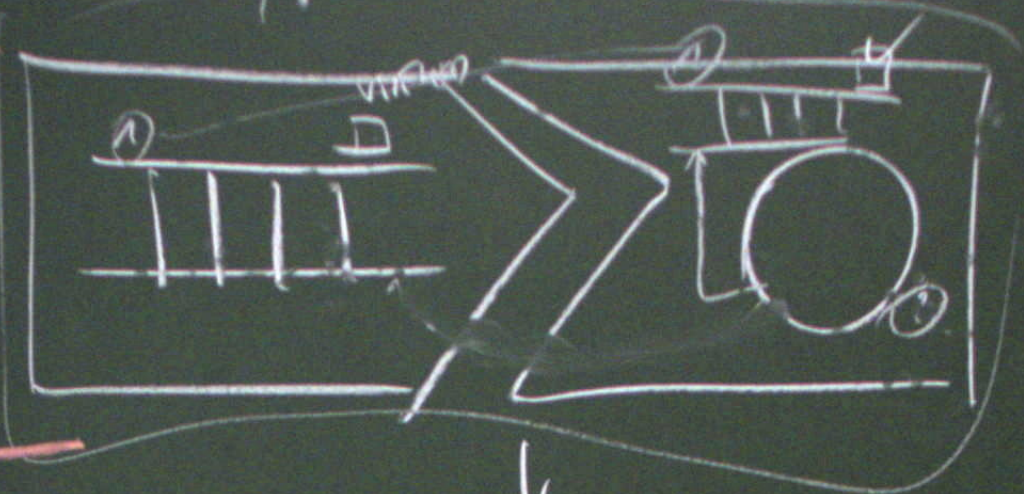
TRACEABILITY

NAC

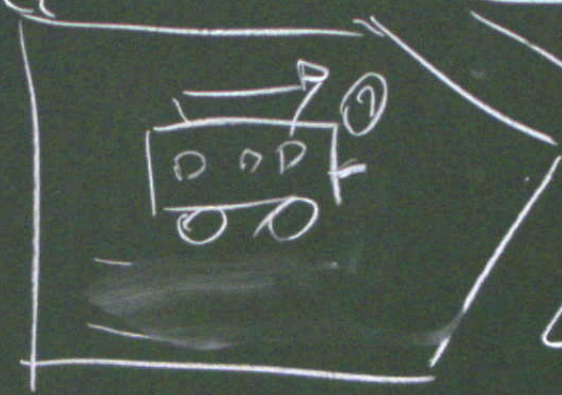


K1

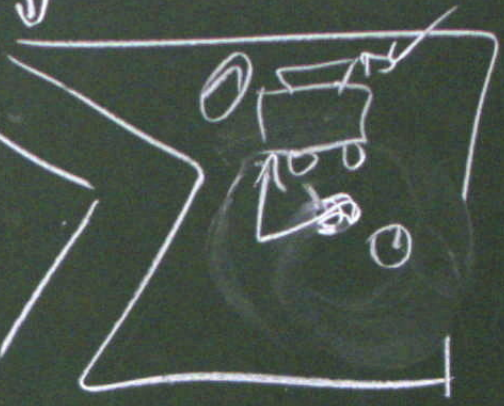
AC



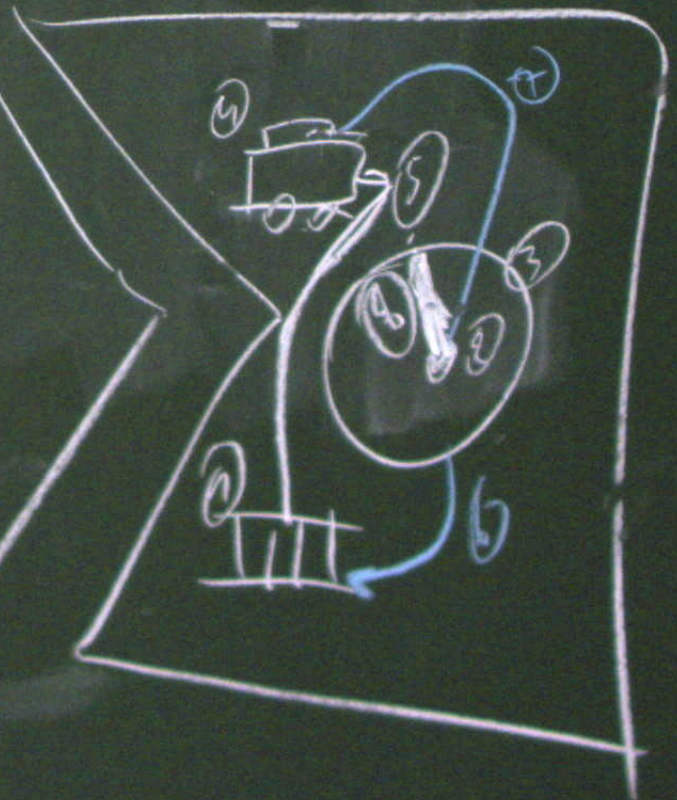
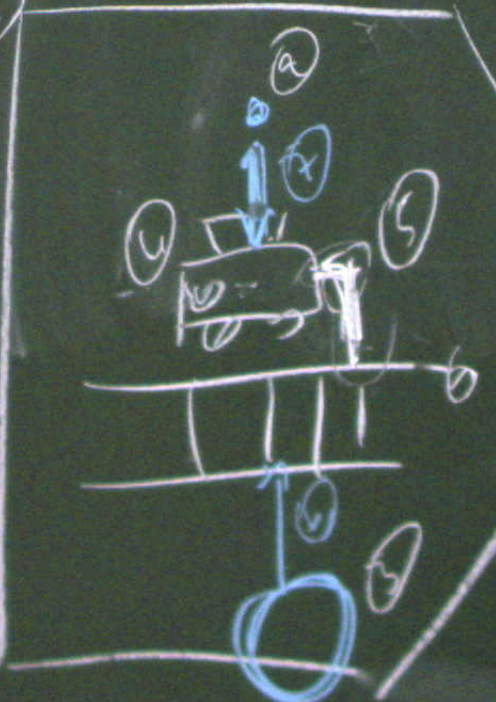
K2



↓



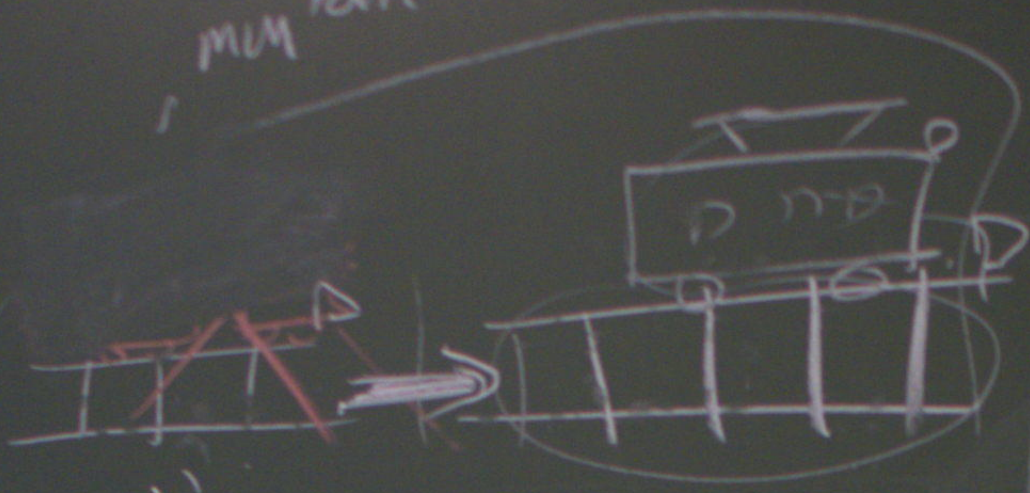
K3



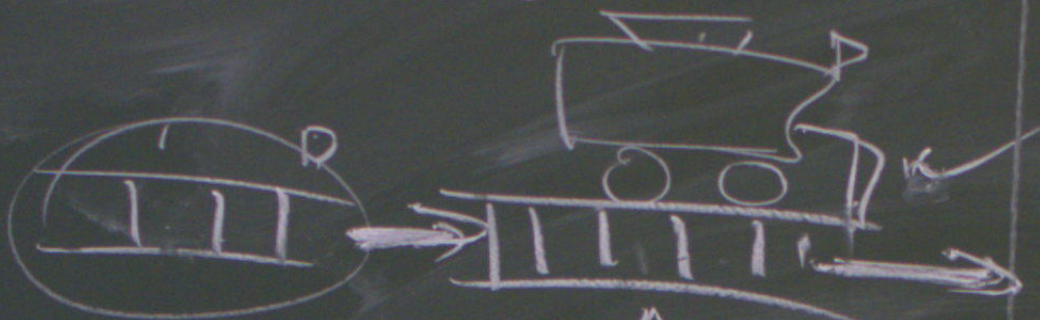
MUM ^{12/11}

ALLOY

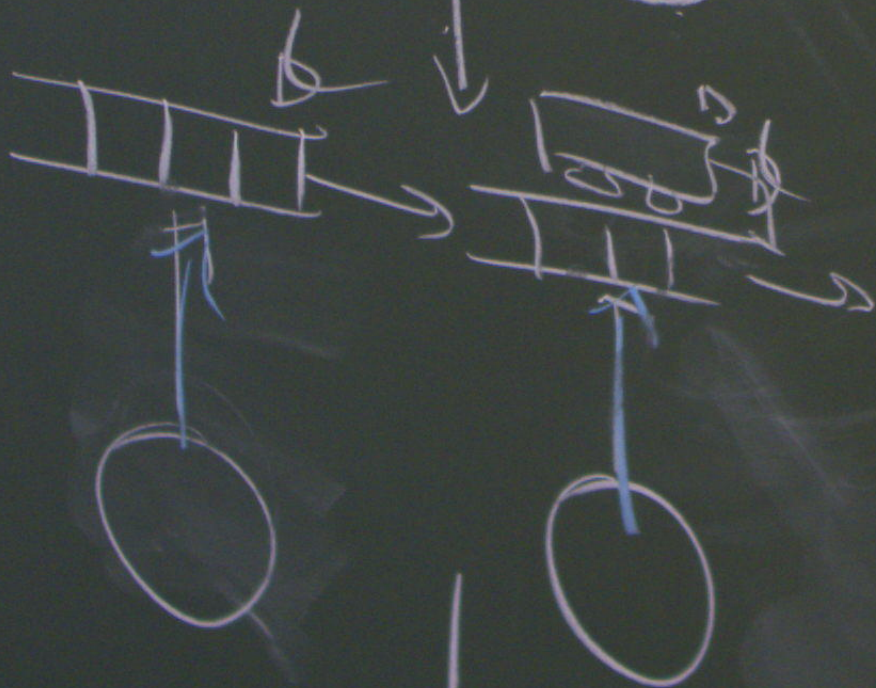
Q.2



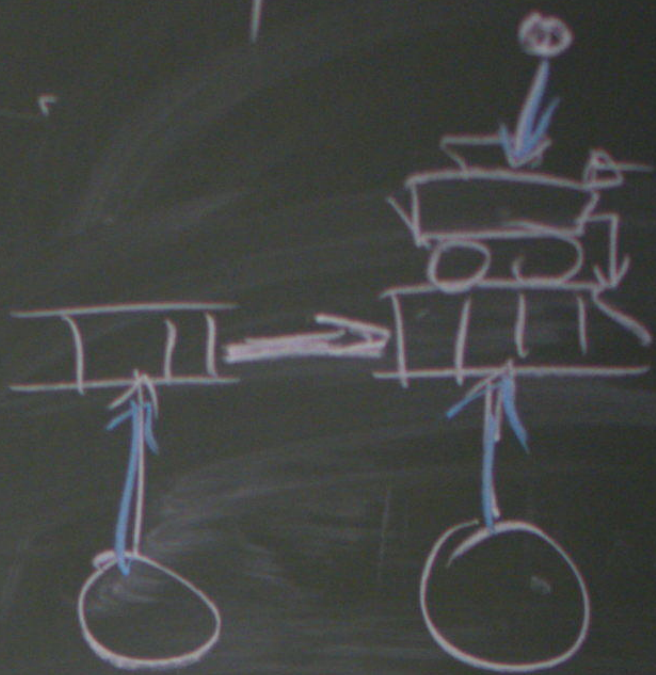
R1



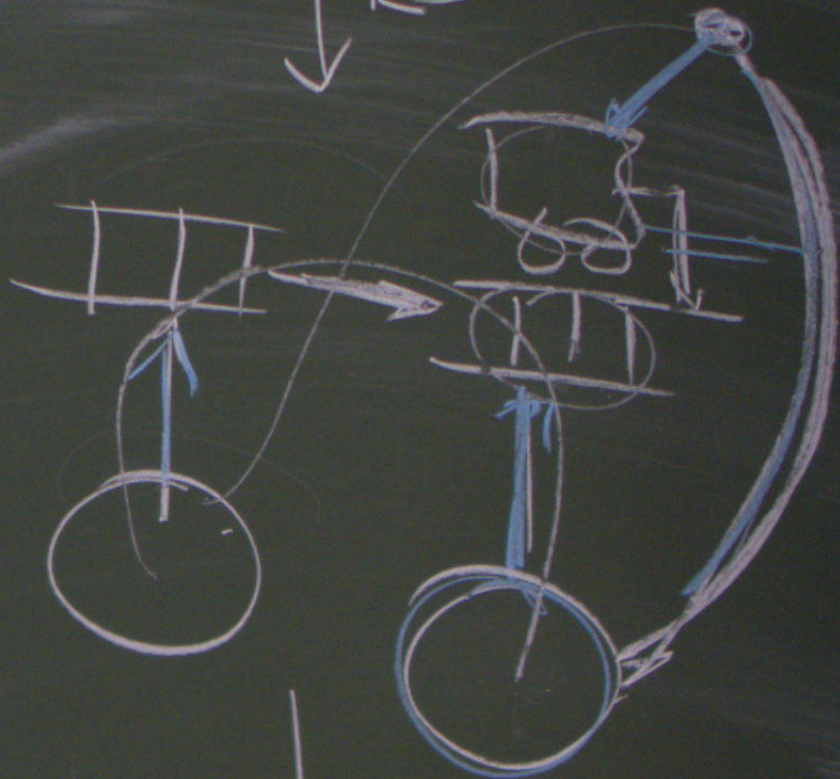
R1



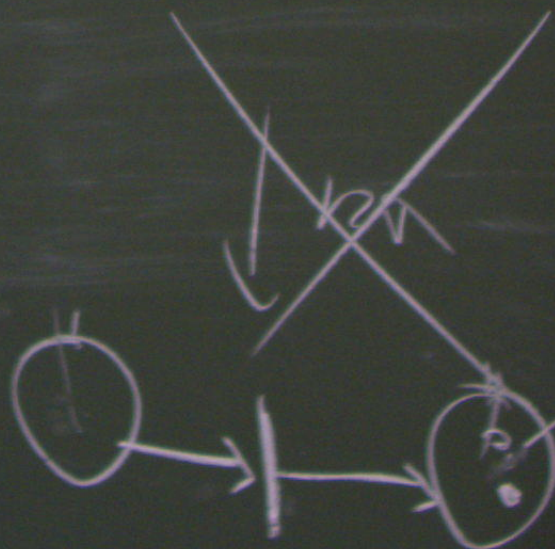
R2



R3



R4



HO87



PATTERN ↓ PIVOT

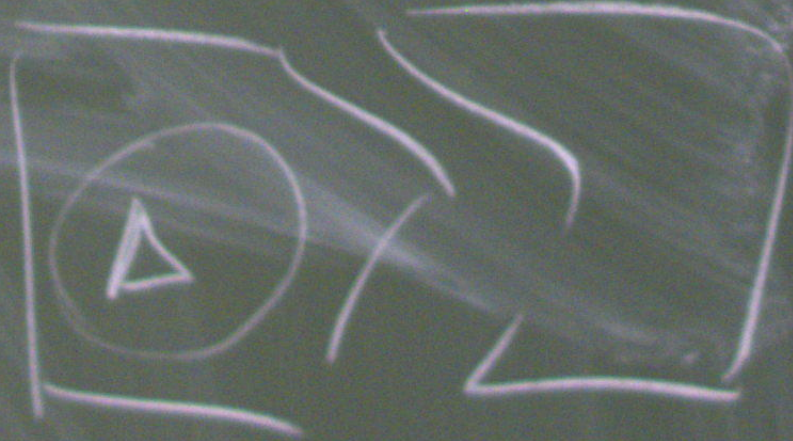
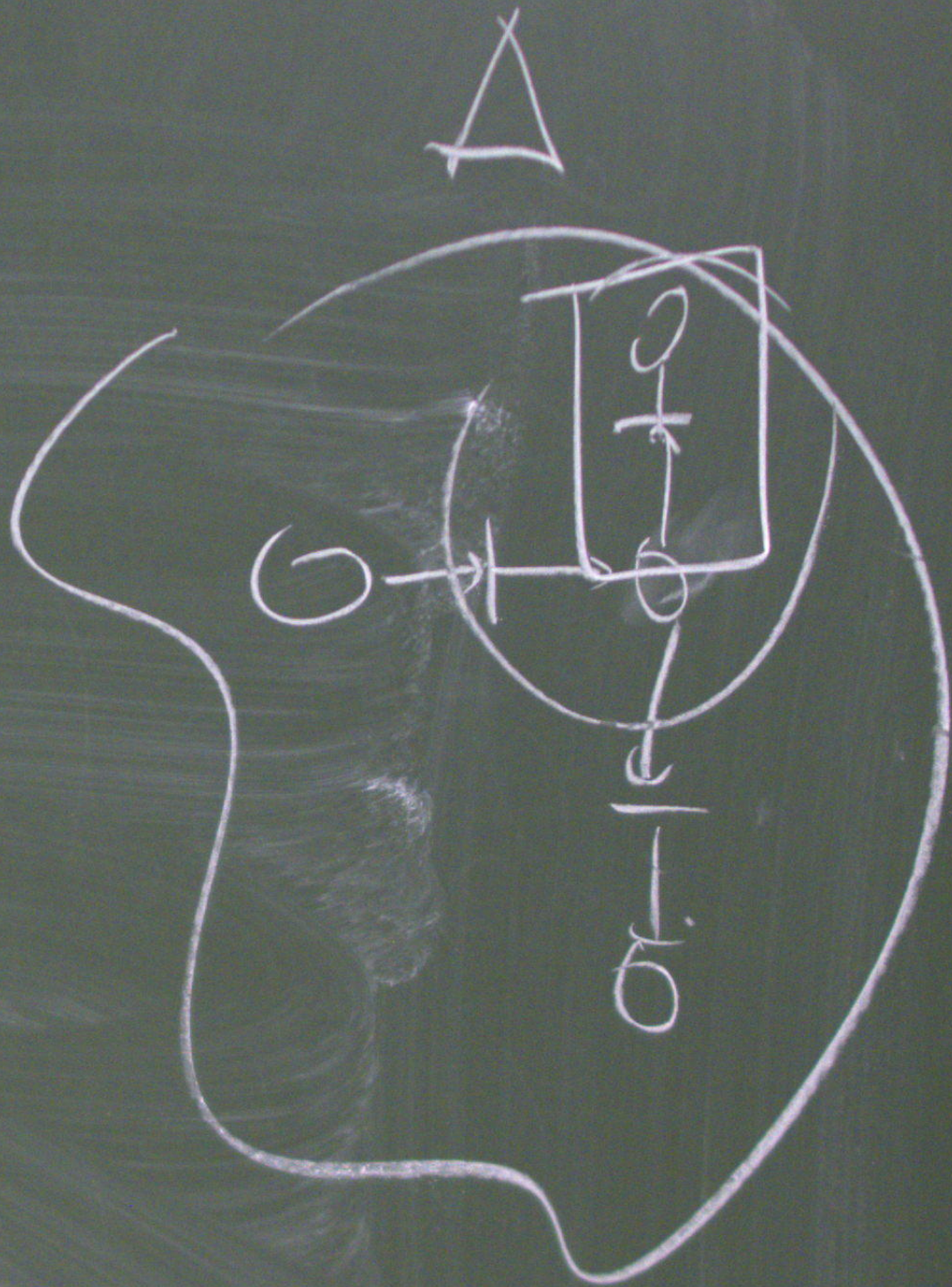
PARTIAL MATCH BINDING
WHEN: TO START?



RETE



TR
VI



m

"A BBBCD"

m

CONFORMS TO

String OF CHARACTERS IN "A" - "Z"

pm

"BA"

pm

conform To

PATTERN LANG IN string

PRE

POST

NAC

LHS

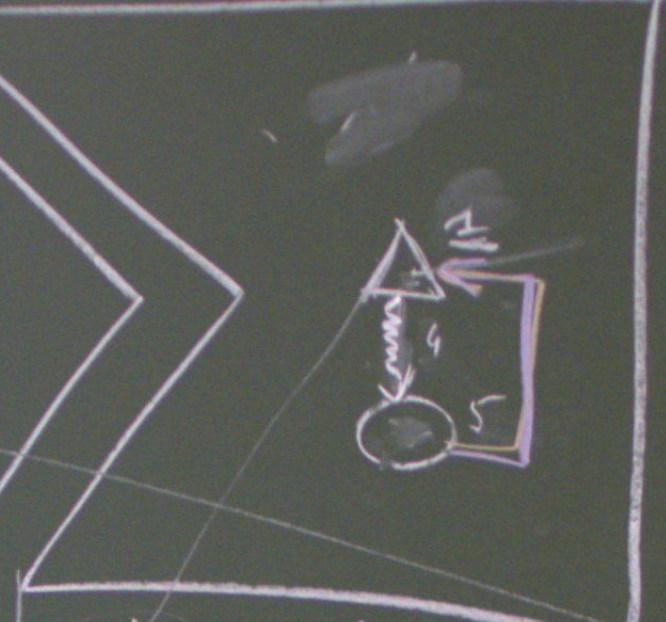
RHS

TRUE

T

Label

PM

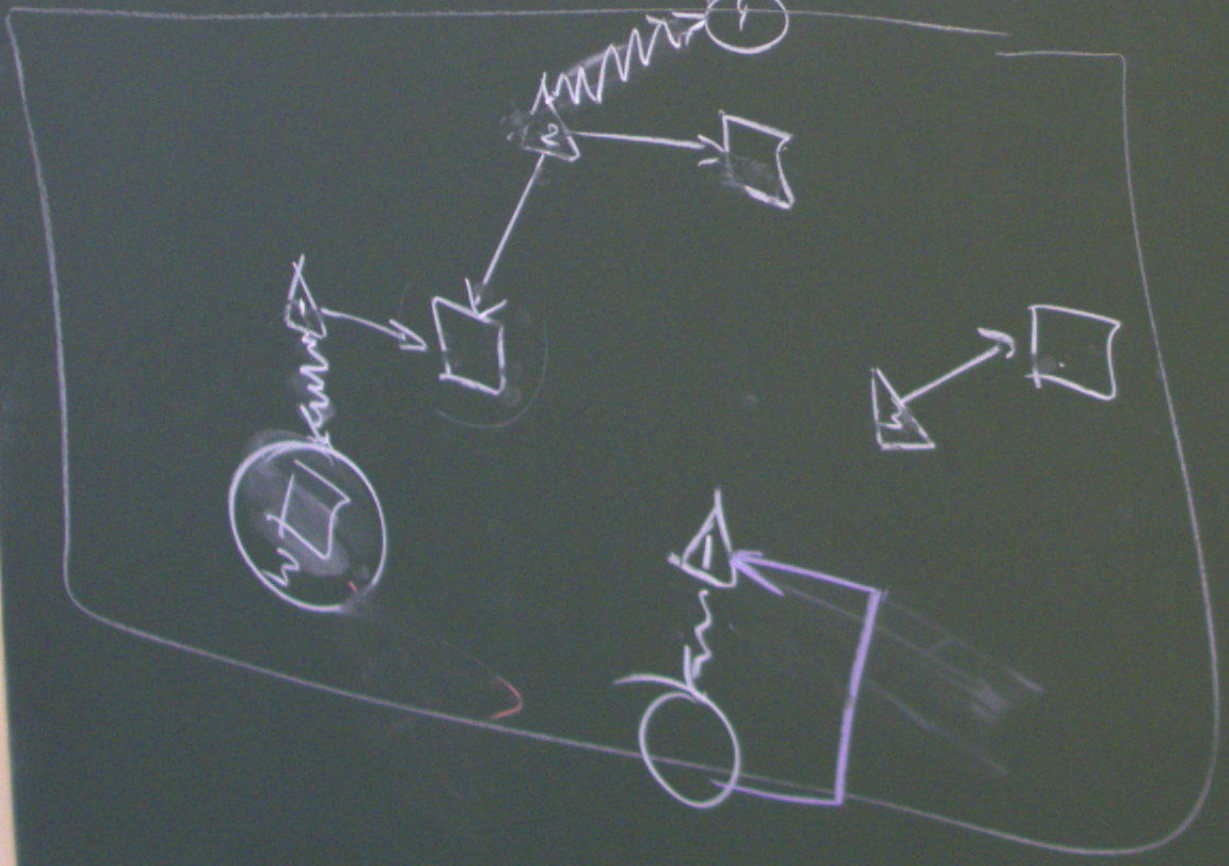


$(node(2).value)^2 < 10$
 $node(1).value == 3$

$node(1).value =$
 POST

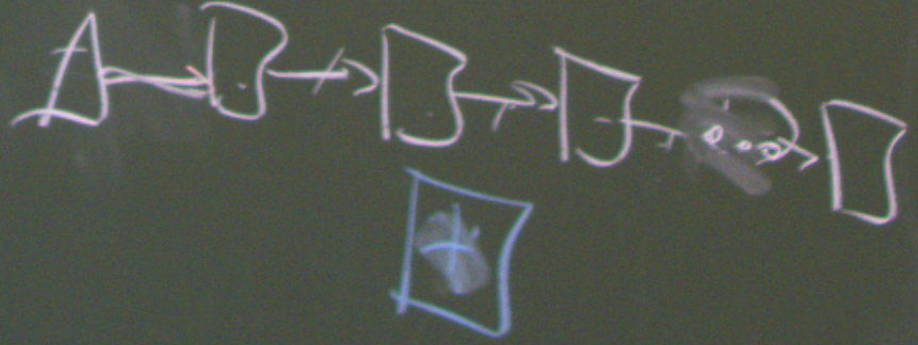
$2 * node(1).value$
 PRE

$node(5).v = node(1).value + 3$
 POST
 PRE

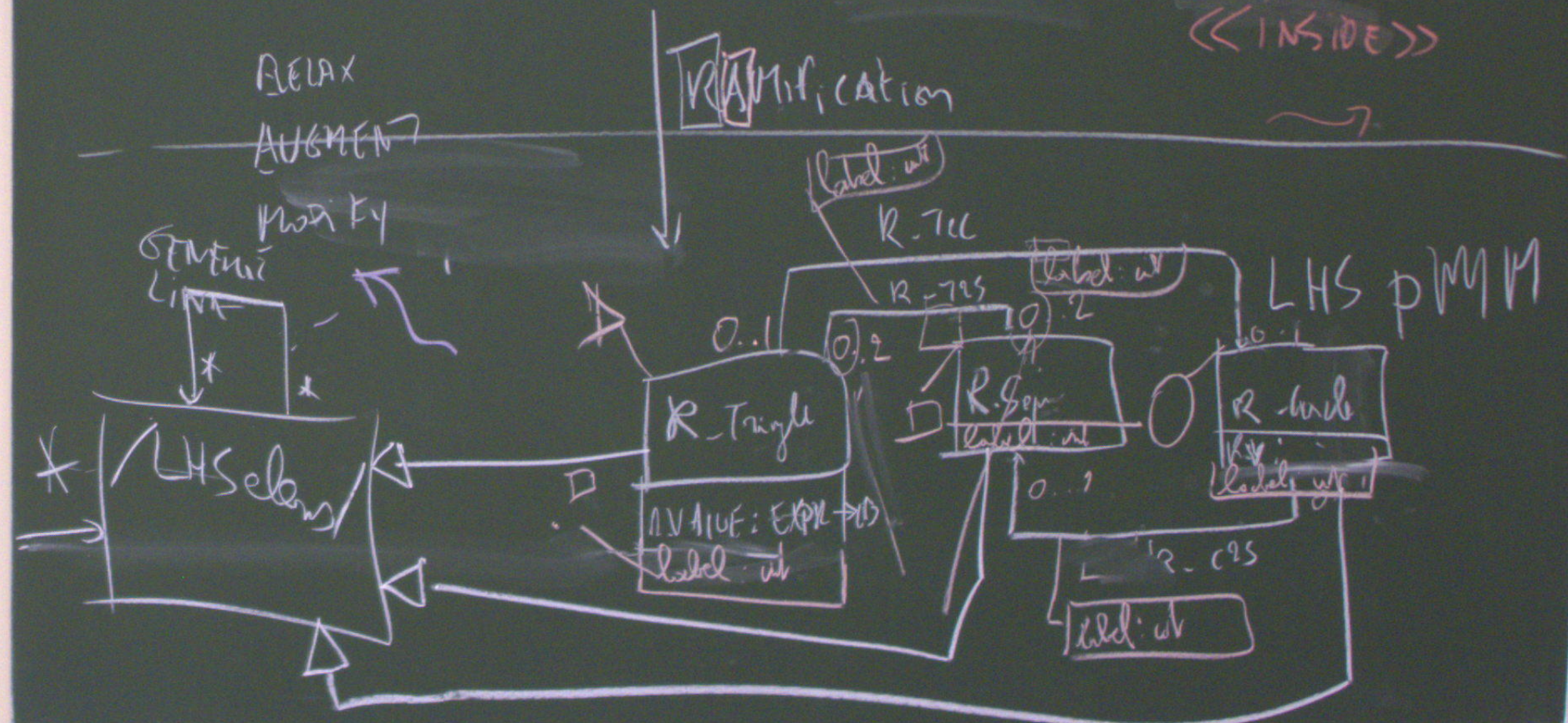
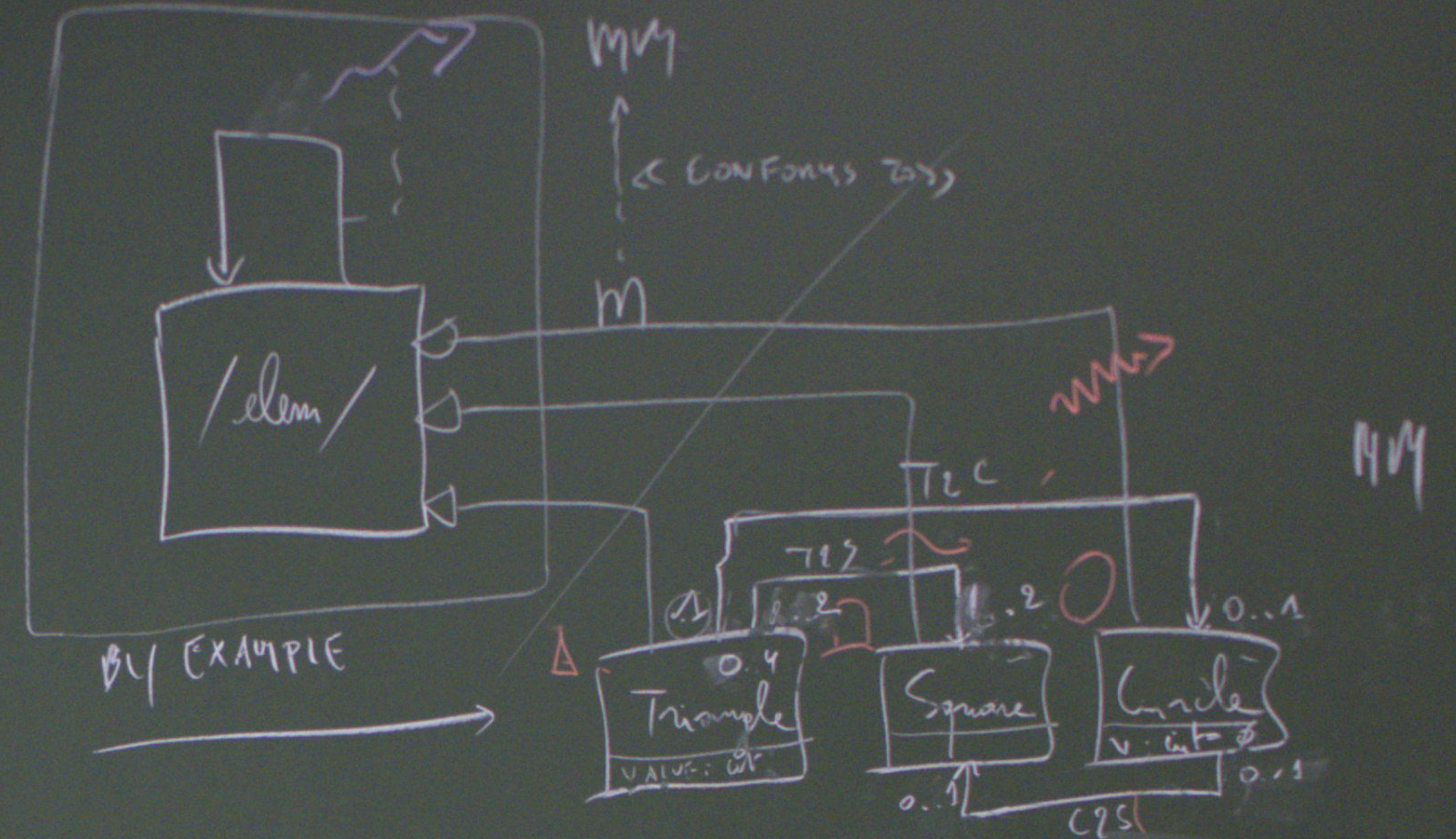
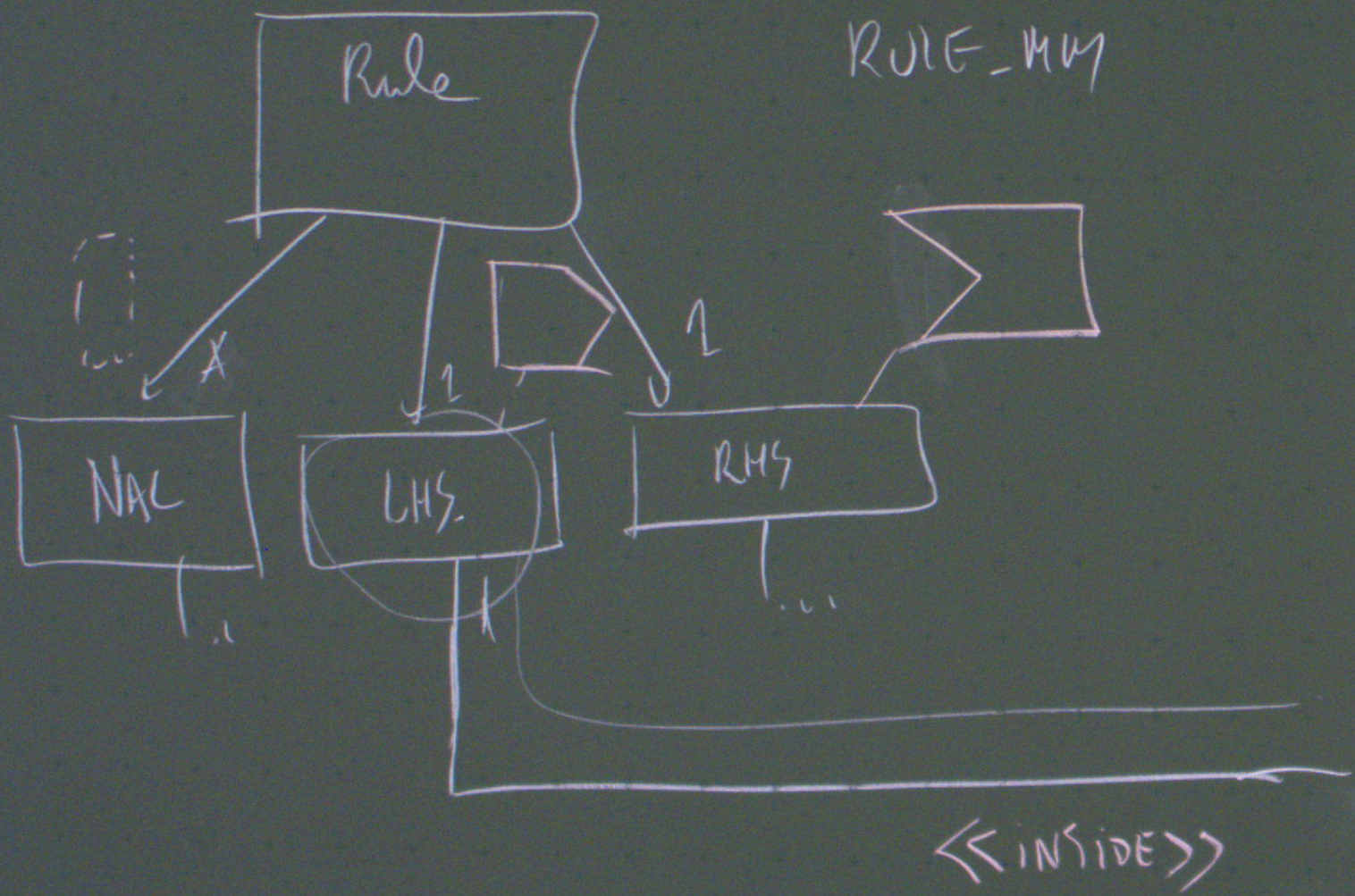


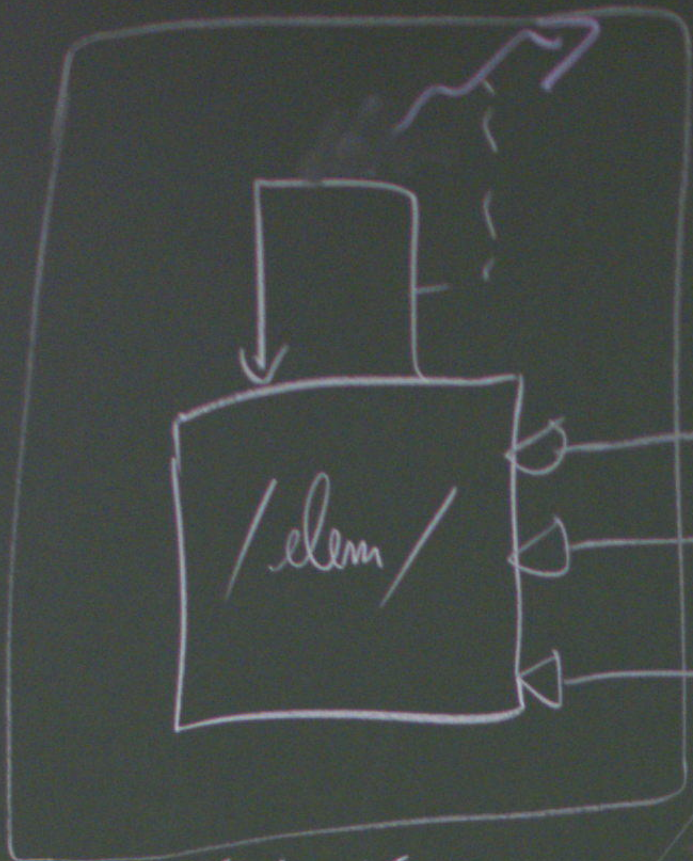
"POST"

m



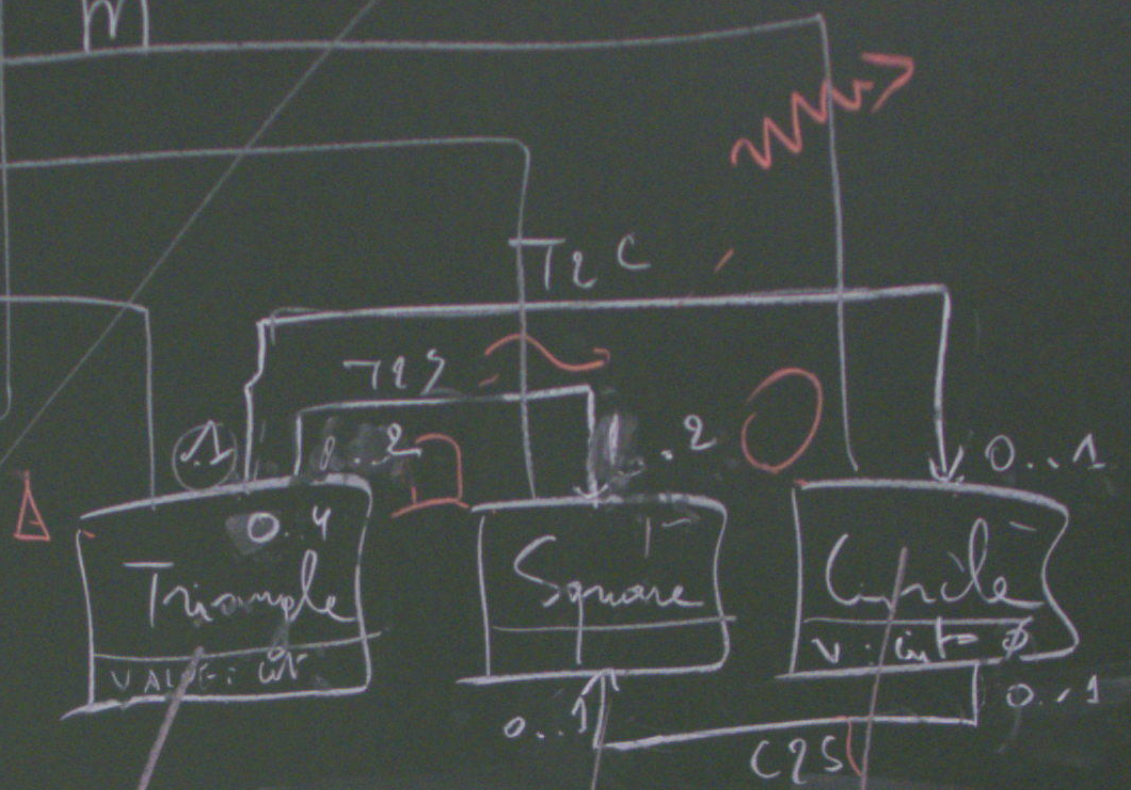
"A" - "2"





MMY
 (CONFORMS TO)

BY EXAMPLE



MMY

RELAX
 AUGMENT

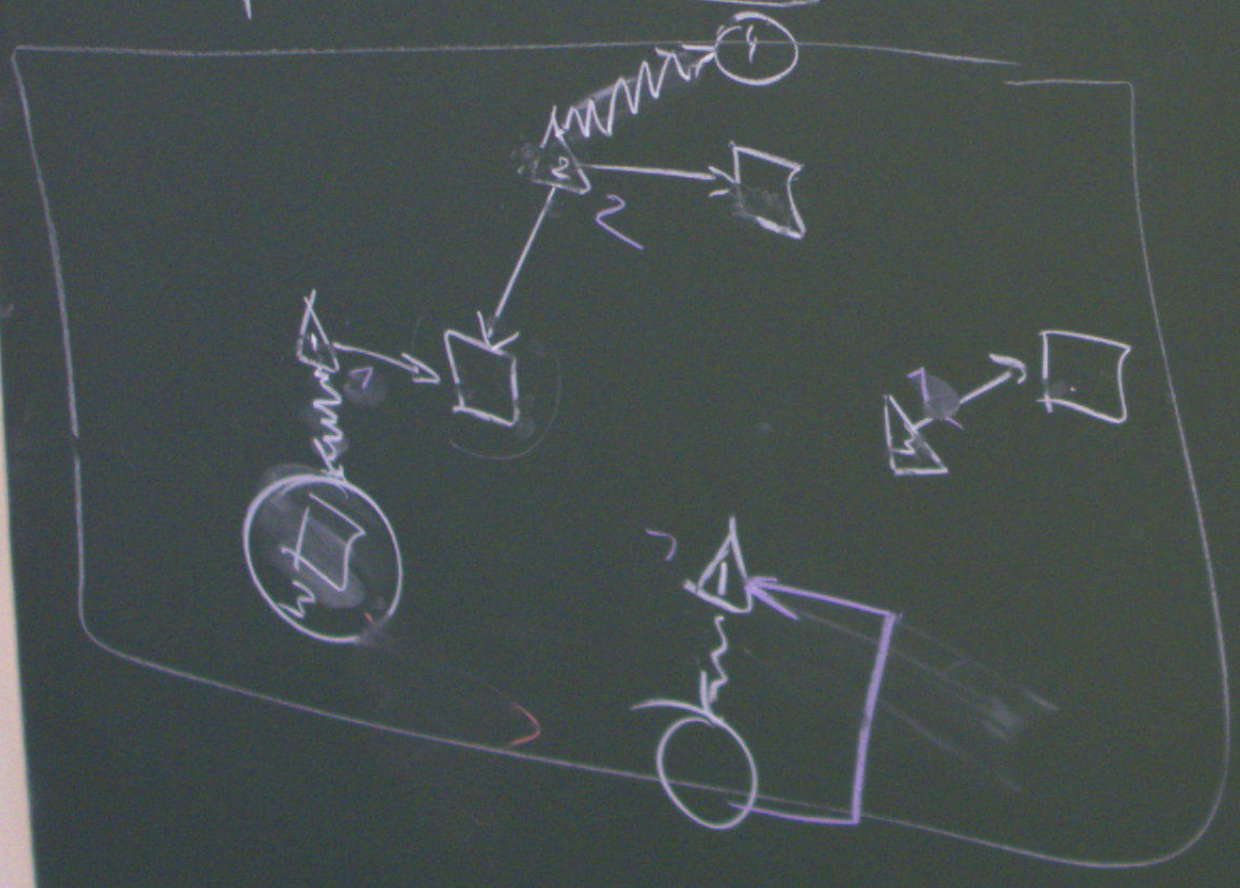
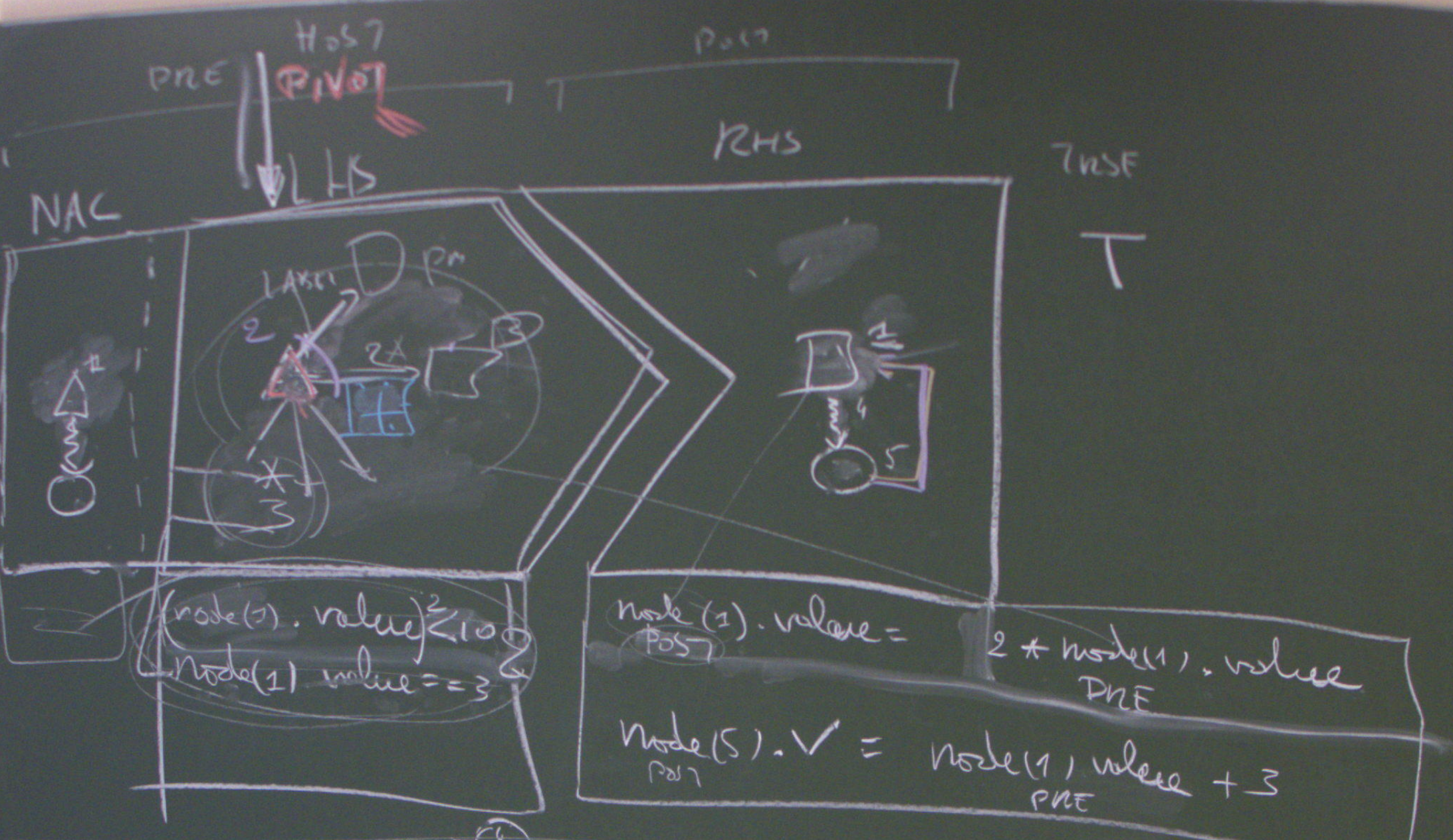
RELAXIFICATION

(INSIDE)

MODIFY

SEMANTIC LINK





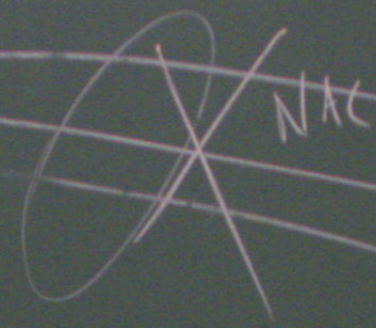
"Host"

m



LHS PATTERN model ← RAM: fixation → HOST model

FOJABA



$(\text{node (1). value})^2 < 10$

match 1

match 2



match (host, pattern model)
LHS + NACS

→ MATCHES →

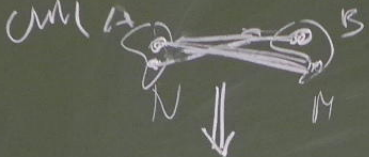
{ match 2, match 2, match 3 }

$\cap \neq \emptyset$ OVERLAP

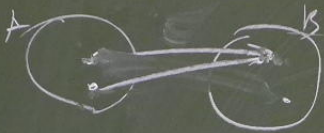
OPTIM
PIVOT ← First MATCH
START

(BI-DIRECTIONAL)

RELATIONAL



FUNCTION

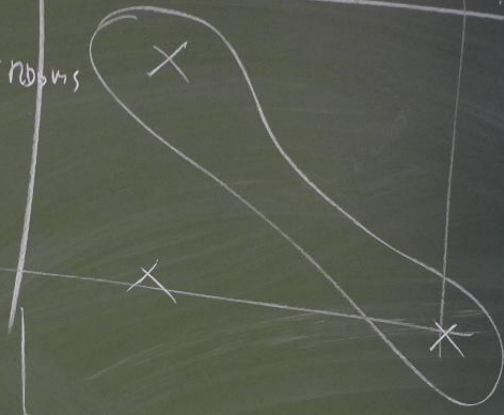


$$R \subseteq A \times B$$

$$F \subseteq R$$

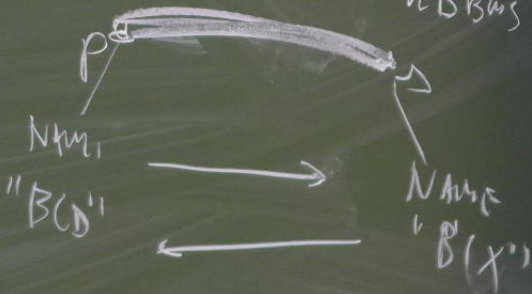
DECLARATIVE
WHAT? \Rightarrow

OPERATIONAL
HOW?



UML

UML BMS



ADT STACK

res = pop()

push(v)

SUBROUTINE (SUBROUTINE) $\$SP, \$SP, 4$
 ST $\$SP, 0(\$SP)$

$\underline{v} = \text{pop}(\text{push}(\underline{v})) \quad \forall v$

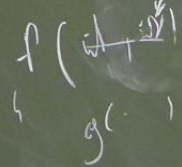
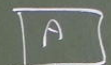
DECLARATIVE

OPERATIONAL

WHAT?

HOW?

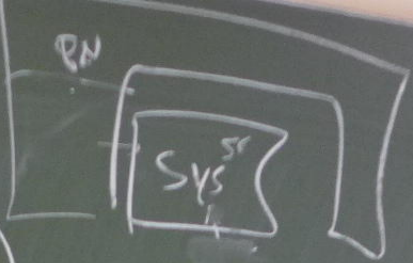
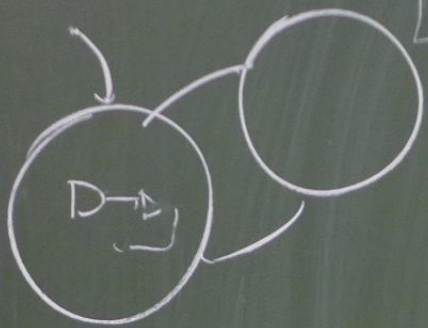
IMPLEMENTATION



PERFORMANCE

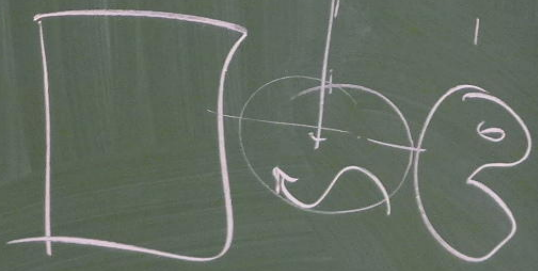
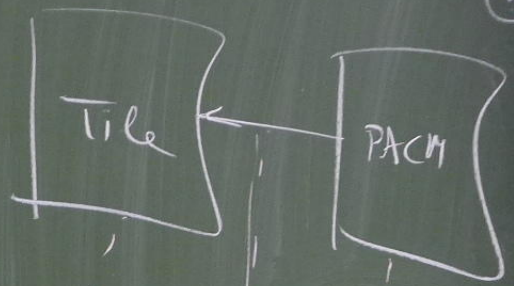
RE-USABLE





25-30 h

6 CREDITS



LSC

