Title: Ausarbeitungen zur Programmierung des Schachspiels
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Date: 1942
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Z [illegible]

$\bar{Z}$ [illegible]

G [illegible]

$\bar{G}$ [illegible]

L [illegible] $L \equiv (Z, G, K)$ [illegible]

$Zug(L_1, L_2)$ [illegible] L_1 [illegible] L_2 [illegible]

$$G(L_1) \sim \left[Z(L_1) \wedge \exists L_2 \left[Zug(L_1, L_2) \wedge G(L_2) \right] \vee \bar{Z}(L_1) \wedge (L_2) \left[Zug(L_1, L_2) \rightarrow G(L_2) \right] \right]$$

[illegible]

$L \equiv (Z, G, K)$

$Z \equiv$ [illegible]

$G \equiv (\overset{1}{g}, \overset{2}{g})$

$\overset{1}{g}$	$\overset{2}{g}$
$-$	$+$
$+$	$-$

[illegible]

$K =$ [illegible]

$$\overset{1}{g}(L_1) \sim \left[\begin{array}{l} Z(L_1) \left[\begin{array}{l} \wedge \bar{\exists} L_2 \left[(Zug(L_1, L_2) \wedge \overset{1}{g}(L_2)\ \overset{2}{g}(L_2) \right] \\ \wedge \exists L_2 \left[(Zug(L_1, L_2)\ \bar{\overset{2}{g}}(L_2) \right] \end{array} \right] \\ \vee \bar{Z}(L_1) \left[\begin{array}{l} \wedge \bar{\exists} L_2 \left[(Zug(L_1, L_2) \wedge \overset{1}{g}(L_2) \wedge \bar{\overset{2}{g}}(L_2) \right] \\ \wedge \exists L_2 \left[(Zug(L_1, L_2) \wedge \bar{\overset{1}{g}}(L_2) \right] \end{array} \right] \end{array} \right]$$

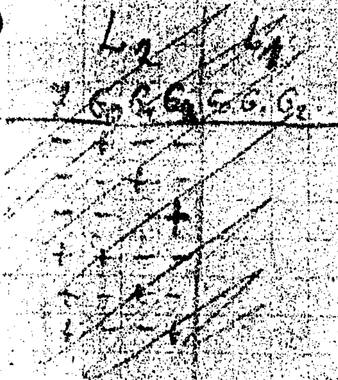
024/006

$$\overset{0}{g}(L_1) \sim \left[Z(L_1) \wedge E L_2 \left(Zg(L_1,L_2) \wedge \overset{2}{g}(L_2) \right) \right] \vee \left[\overline{Z}(L_1) \wedge (L_2) \left(Zg(L_1,L_2) \rightarrow \overset{0}{g}(L_2) \right) \right]$$

$$G_0 \sim \overline{\overset{1}{g}}$$

$$G_1 \sim \overset{1}{g} \wedge \overline{\overset{2}{g}}$$

$$G_2 \sim \overset{1}{g} \wedge \overset{0}{g}$$



$$G_0'(L_1) =_{Df} \exists(L_2)\left[Zg(L_1,L_2) \wedge G_0(L_2) \right]$$

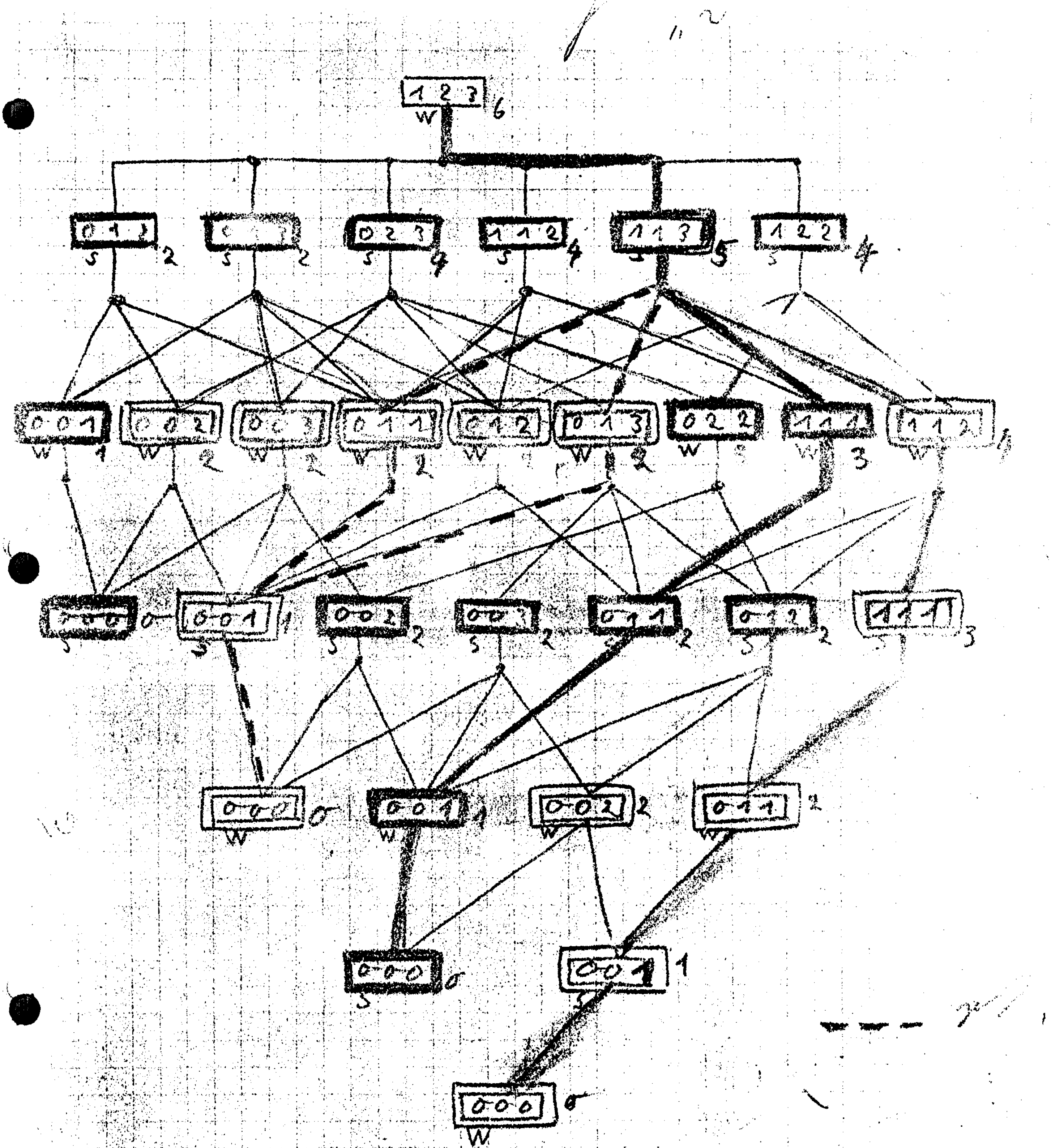
$$G_1'(L_1) =_{Df} \exists(L_2)\left[Zg(L_1,L_2) \wedge G_1(L_2) \right]$$

$$G_2'(L_2) =_{Df} \exists(L_2)\left[Zg(L_1,L_2) \wedge G_2(L_2) \right]$$

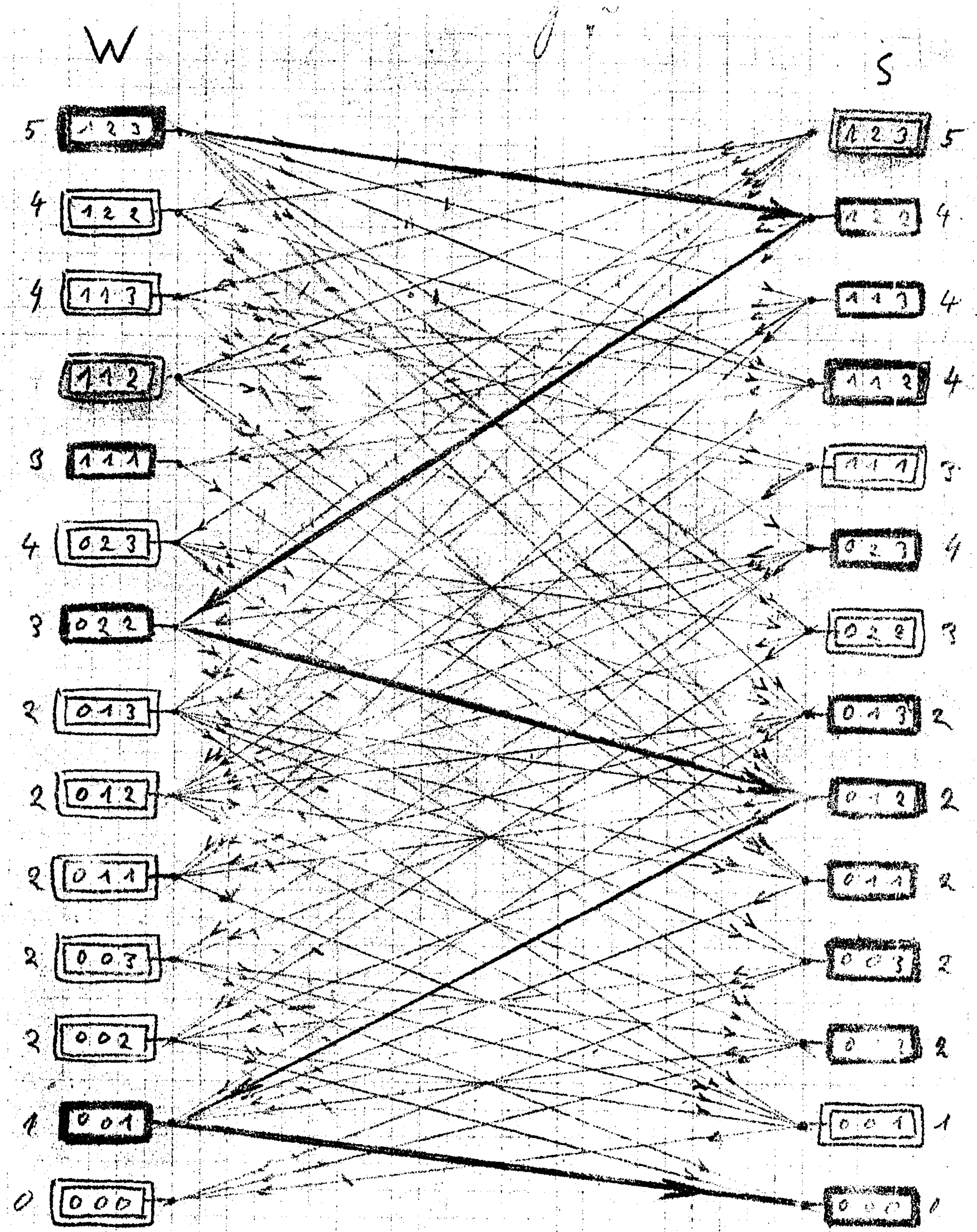
$$G_0(L_1) \sim \left[\left[Z(L_1) \wedge G_0'(L_1) \wedge \overline{G_2'}(L_2) \right] \vee \left[\overline{Z}(L_1) \wedge G_0'(L_1) \wedge \overline{G_1'}(L_1) \right] \right]$$

$$\boxed{\begin{aligned} G_0 &\sim G_0' \wedge (Z \wedge \overline{G_2'}) \vee \overline{Z} \wedge \overline{G_1'} \\ G_1 &\sim \overline{Z} \wedge G_1' \vee (Z \wedge \overline{G_0'} \wedge \overline{G_2'}) \\ G_2 &\sim Z \wedge G_2' \vee (\overline{Z} \wedge \overline{G_0'} \wedge \overline{G_1'}) \end{aligned}}$$

Z	G_0'	G_1'	G_2'	G_0	G_1	G_2
–	–	–	–			
–	–	–	+			+
–	–	+	–		+	
–	–	+	+		+	
–	+	–	–	+		
–	+	–	+	+		
–	+	+	–		+	
–	+	+	+		+	
+	–	–	–			
+	–	–	+			+
+	–	+	–		+	
+	–	+	+			+
+	+	–	–	+		
+	+	–	+			+
+	+	+	–	+		
+	+	+	+			+



1 2 3
W 6
0 1 1
S 2
S 2
0 2 3
S 4
1 1 2
S 4
1 1 3
5
1 2 2
S 4
0 0 1
W 1
0 0 2
W 2
W 2
0 1 1
W 2
0 1 2
W
0 1 3
W 2
0 2 2
W
W 3
1 1 2
W 4
0 0 0
S 0
0 0 1
S 1
0 0 2
S 2
S 2
0 1 1
2
0 1 2
S 2
1 1 1
3
0 0 0
W 0
0 0 1
W 1
0 0 2
W 2
0 1 1
2
0 0 0
S 0
0 0 1
S 1
0 0 0
W 0


W
S
5 1 2 3
4 1 2 2
4 1 1 3
1 1 2
3 1 1 1
4 0 2 3
3 0 2 2
2 0 1 3
2 0 1 2
2 0 1 1
2 0 0 3
2 0 0 2
1 0 0 1
0 0 0 0
1 2 3 5
1 2 2 4
1 1 3 4
1 1 2 4
1 1 1 3
0 2 3 4
0 2 2 3
0 1 3 2
0 1 2 2
0 1 1 2
0 0 3 2
0 0 2 2
0 0 1 1
0 0 0 0

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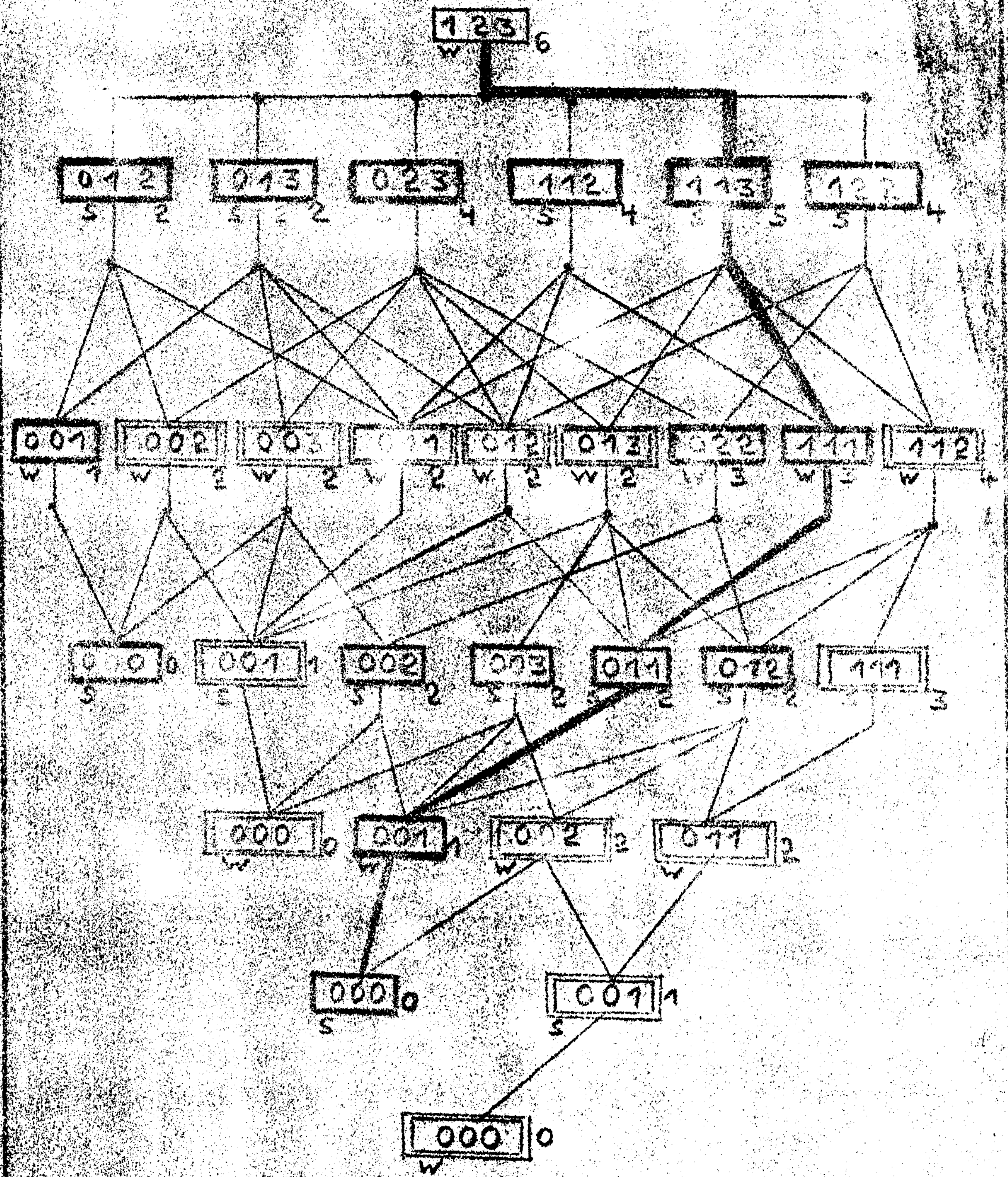


1) [illegible]

2) [illegible] 0, 1, 2, 3 [illegible]

3) [illegible]

[illegible]

1) [illegible] WK, WT, [illegible] $3 \times A\Delta 2 = A\Delta 20$

[illegible] $5\ A\Delta 20$ [illegible]

[illegible]

$P\Delta 300$.

	R(V)	⇒ R
V	0	0
A	Δ20	0

	v ≠	v ∧	v ≠	v ∧	v ≠	v ∧	|v −	v| > 1 ∨	|v −	v| > 1	⇒ R
V	0	0	0	0	0	0	0	0	0	0	0
K	0	1	0	2	1	2	0.0	2.0	0.1	2.1	
A	Δ1	Δ1	Δ2	Δ1	Δ1	Δ2	Δ1	Δ1	Δ1	Δ1	0

[illegible]

$P\Delta 301$. „[illegible]"

	R(V)	⇒ R
V	0	0
A	Δ20	0

	v =	v ∨	v =	v	⇒ RΔ301
V	0	0	0	0	0
K	1.0	2.0	1.1	2.1	
A	Δ1	Δ1	Δ1	Δ1	0

$P\Delta 302$ „[illegible]"

	|v −	v| ≤ 1 ∧	|v −	v| ≤ 1	⇒ RΔ302
V	0	0	0	0	
K	1.0	2.0	1.1	2.1	
A					

$P\Delta 303$. „$\forall v_0$ [illegible]"

	R(v	v)	⇒ R
V	0	1	
A	Δ2	Δ20	

	[|v −	v| ≤ 1 ∧ |v −	v| ≤ 1] ∨
V	0	1
K	0	0.0
A		

	|v −	v| ≤ 1] ∨
V	0	1
K	1	0.1
A		

[illegible]

1) [illegible]

a) [illegible]

b) [illegible]

c) [illegible]

d) [illegible]

e) [illegible]

2) [illegible]

3) [illegible]

a) [illegible]

b) [illegible]

c) [illegible]

4) [illegible]

a) [illegible]

b) [illegible]

c) [illegible]

d) [illegible]

Richtige Postleitzahl – beschleunigte Zustellung 34

16.4

v	zr		+
v	)		++
v	o		++
zr	v	+	
	zr		
¬	¬	+	
¬	(	+	
—	v	+	
—	¬	+	
—	(	+	
(	o	+	
(	¬	+	
(	(	+	
)	zr		+
)	)		+
)	o		+
o	v	+	
o	¬	+	
o	(	+	

v zr ¬ ( ) o

¬ v (Az

v) Sz

¬ zr ¬ o

) o zr

$\oplus, \ominus$

										16.4	16.12	16.13	16.14 Az(x)	16.15 Sz(x)	16.16	16.17
16.1	v	+	0	0	0	0	0	0	0	-	-	-	+	+		-
16.2	zr	-	-	-	0	0	0	0	0	-		-	+	-	+	+
16.3	¬	-	-	+	0	0	-	-	-	-		+	+	-	+	-
16.5	(	-	+	-	-	0	0	0	0	+	-	-	+		+	-
16.6	)	-	+	-	+	0	0	0	0	+	-	-	-	+		+
16.8	∨	-	+	+	0	0	-	-	+	-	+	+	-	-	+	+
.9	∧	-	+	+	0		-	+	-	-	+	+		-	+	+
.10	→	-	+	+	0	0	-	+	+	-	+	+		-	+	+
.11	~	-	+	+	0	0	+	-	-	-	+	+	-	-	+	+
.12	≁	-	+	+	0	0	+	-	+	-	+	+		-	+	+

16.14: $\underset{n}{v} \vee [(\underset{n-1}{v} \sim \underset{n-2}{v}) \wedge (\overline{\underset{n-2}{v}} \to \overline{\underset{n-3}{v}})]$ Az(x) [illegible]

16.15 $v_n \vee R16.6(v)$ Sz(x) [illegible]

16.16 $\overline{v_n} \wedge \overline{R16.6(v)}$ [illegible] Az

16.17: $\overline{R16.14(v)}$ [illegible] Sz

16.20: [illegible]

$$\bigvee \Big| G(\underset{0}{v}, \underset{1}{v}) \Rightarrow \underset{0}{R}$$

1n 1n 0

$(R16.16(\underset{0}{v}) \wedge R16.14(\underset{1}{v})) \vee (R16.15(\underset{0}{v}) \wedge \overline{R16.14(\underset{1}{v})}) \vee (R16.2(\underset{0}{v}) \wedge R$ ...

[illegible]

[illegible]

[illegible]

[illegible]

zu 6: $Va'(x) \rightarrow Sa(x)$.

$Ex\ Ey\ (Sa(x) \wedge Sa(y) \wedge v_0 = (x_{\shortparallel}\, \mathfrak{d}_{\shortparallel}\, y)) \rightarrow Sa(v_0)$.

$v_0 = (x_{\shortparallel}\, \mathfrak{d}_{\shortparallel}\, y) \rightarrow E$

$R\Delta O(v_0, v_1) \Rightarrow R$ def: $Sa(v_0)$

$\square\alpha\sigma\ \square\times\sigma\ \ \square\times\sigma$

$(v_{0\shortparallel}\, \mathfrak{d}, v_1) \Rightarrow R$

$R\Delta O'(v_0)$

$Ex\ Ey\ (Sa(x) \wedge Sa(y) \wedge R\Delta O(x, y))$

$Va'(v_0) \rightarrow Sa(v_0)$

$(Sa(v_0) \wedge Sa(v_1) \wedge R\Delta O(v_0, v_1) = v_2) \rightarrow Sa(v_2)$.

$Ex\ Ey\ (Sa(x) \wedge Sa(y) \wedge R\Delta O(x, y) = v_0) \rightarrow Sa(v_0)$

[illegible]

$R\Delta O'(v_0)$

$\sim Ex[x \subset v \wedge Op(x) \wedge Sa[\hat{y}(y \subset v_0 \wedge J(y) < J(x))]$
$\wedge Sa[\hat{y}(y \subset v_0 \wedge J(y) > J(x))]]$

2. [illegible]

$R\Delta O'(v_0) \rightarrow E(x)(x \subset v_0 \wedge Op(x))$.

[illegible]

$\overline{E(x)}(x \subset v_0 \wedge Op(x)) \rightarrow \overline{R\Delta O'}(v_0)$

$A_e \rightarrow A_a$: E_{a_0} | $A_e \rightarrow A_b$ E_{b_0}

$A_e \longrightarrow A_f$ E_{f_1}

$A_e \longrightarrow A_g$ E_{g_1}

$A_e \longrightarrow C$ F_c

$A_f \rightarrow A_a$ E_{a_1} $A_f \rightarrow A_e$ E_{b_1}

$A_f \rightarrow A_a$ E_{a_2}

$A_f \rightarrow A_b$ E_{b_1}

$C \rightarrow A_f$ E_{f_2}

$C \rightarrow A_g$ E_{g_2}

$A_g \rightarrow T$

$T \rightarrow A_f$

Aus V: $Va'(y_0) \rightarrow Sa(y_0)$

$$R\Delta o'(y_0) \rightarrow Sa(y_0)$$

$Va'(y_0) \vee R\Delta o'(y_0) \rightarrow Sa(y_0)$

$$\overline{R\Delta o'}(y_0) \rightarrow [Va'(y_0) \rightarrow Sa(y_0)]$$

~~$(\mu x(x \subset y_0 \wedge O_p(x)) = y) \wedge (\hat{x}(x \subset y_0 \wedge$~~

$$\left[(\mu x(x \subset y_0 \wedge O_p(x)) = y) \wedge (\hat{x}(x \subset y_0 \wedge J(x) < J(y)) = z\right]$$

$$\rightarrow \overline{E}x(x \subset z \wedge O_p(x))$$

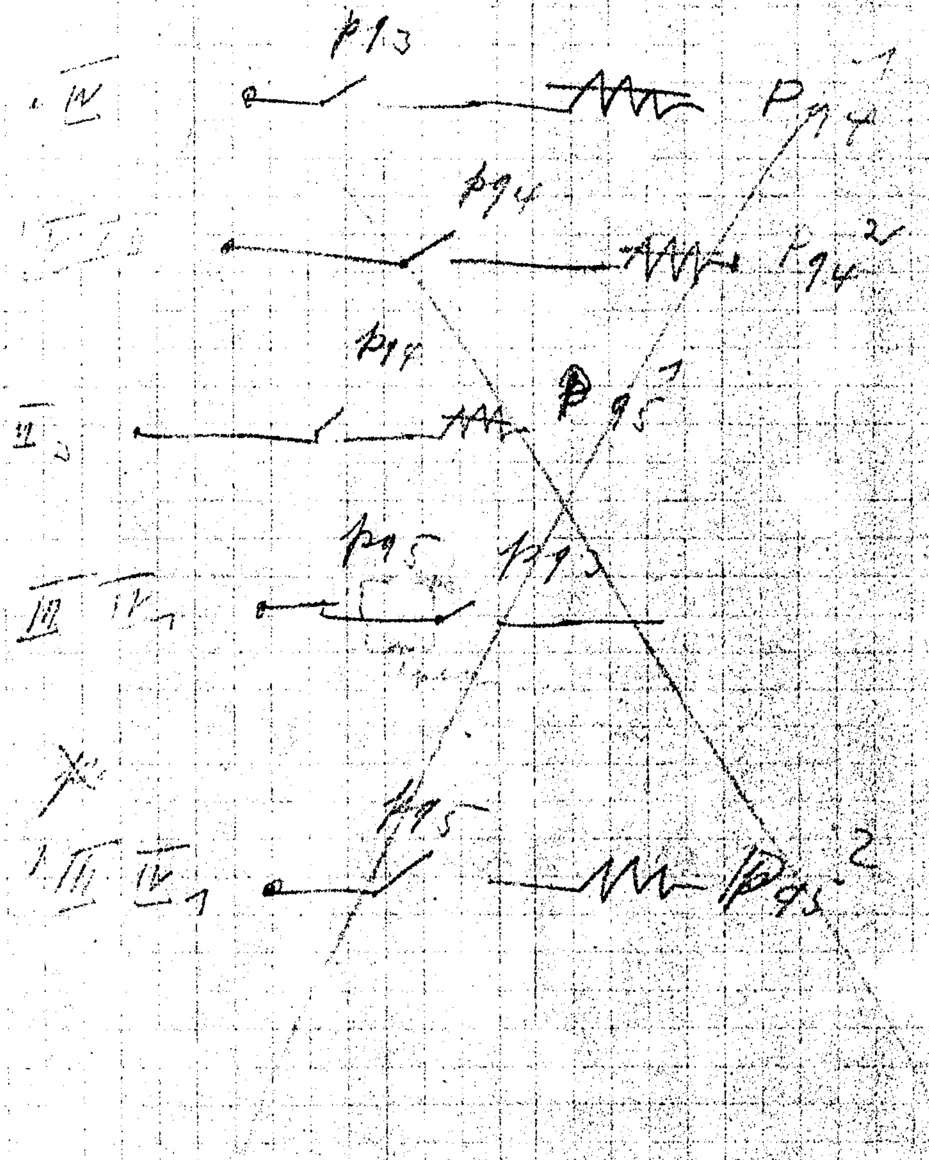
$$\overline{E}x(x \subset z \wedge O_p(x)) \rightarrow \overline{R\Delta o'}(z)$$

$$R\Delta o'(z) \rightarrow [Va'(z) \rightarrow Sa(z)]$$

Lz:

$$\left((\mu x(x \subset y_0 \wedge O_p(x)) = y) \wedge (\hat{x}(x \subset y_0 \wedge J(x) < J(y)) = z\right)$$

$$\rightarrow [Va'(z) \rightarrow Sa(z)]$$


p13
p94
p14
p95
p95
p95
p95
IV
II
III IV
III IV

[illegible]

$R\Delta o(v_0, v_1) \Rightarrow R$ — [illegible]: $Sa(v_0) \wedge Sa(v_1)$.

$(v_0, d, v_1) \Rightarrow R$

$$R\Delta o'(v_0) \rightarrow [(Ex)(Ey)(Sa(x) \wedge Sa(y) \wedge R\Delta o(x,y) = v_0)]$$

[illegible] $Sa(v_0)$

$$'Sa'(v_0) \rightarrow Sa(v_0)$$

$$R\Delta o'(v_0) \rightarrow Sa(v_0)$$

$$'Sa'(v_0) \vee R\Delta o'(v_0) \rightarrow Sa(v_0)$$

[illegible] $'Sa(v_0)$.

[illegible]

$$(Ex)(Sa(v_0, x)) \rightarrow {}'Sa(v_0)$$

[illegible] $R\Delta o$ [illegible]:

$$Sa(v_0) \rightarrow {}'Sa(v_0)$$

$$(Ex)(Ey)[(x, y) = v_0 \wedge Sa(x) \wedge Op(y)] \rightarrow {}'Sa(v_0).$$

$$Sa(v_0) \vee [(Ex)(Ey)[(x, y) = v_0 \wedge Sa(x) \wedge Op(y)]] \rightarrow {}'Sa(v_0)$$

E

$\frac{E}{c^2} = m$

$\frac{h\nu}{c^2} = m$

$\boxed{\frac{h\nu}{c} = \frac{h}{\lambda}} = G$ Zuordnung eines Impulses zu einer Wellenlänge.

Zuordnung einer Wellenlänge zu einem Teilchen

$\boxed{mv = \frac{h}{\lambda}}$

$\lambda = \frac{h}{mv}$

$\int G\,ds = n \cdot h$

$m \cdot v \cdot a \cdot 2\pi = h\,n$

$m \cdot v \cdot a = \frac{h\,n}{2\pi}$

$\frac{E}{c^2} = m$

$\frac{h\nu}{c^2} = m$

$\frac{h\nu}{c} = mv$

$\frac{h}{\lambda} = p$

$\lambda = \frac{h}{p}$

[illegible]

$$\cancel{\underset{m\times\sigma}{Sa(V_0)} \to (x)[x = \hat{y}(y \subset V_0 \wedge 'y < m) \to 'Sa(x)]}$$

$$\underset{m\times\sigma}{Sa(V_0)} \to (x)[x < m \to 'Sa[\hat{\hat{y}}(y \subset V_0 \wedge 'y) \le x]]$$

8

[illegible] A

$$Sa(V_0) \Rightarrow (x)[(Ey)((x, y) = V_0) \to 'Sa(x)]$$

S×σ B×σ

[illegible]

[illegible] D:

$$Sa(V_0) \wedge (Ey)((x, y) = V_0) \to 'Sa(x)$$

[illegible]

$$\left.\begin{matrix} V \\ S \end{matrix}\right| Tl(\underset{m\times\sigma}{V_0}, \underset{9}{V_1}) \Rightarrow \underset{r\times\sigma}{R_1}$$

[illegible]: $V_1 \le m$

$$(W1(V_1 - 1))\begin{bmatrix} V_{0,i} \Rightarrow R_{0,i} \end{bmatrix}$$

$V_0 = 'V_1$ [illegible] $'Ex(Tl(V_1, r) = V_0)$

$$Sa(V_0) \Rightarrow (x)((x = 'V_0) \to 'Sa(x))$$

$$Sa(V_0) \wedge (V_1 = 'V_0) \to 'Sa(V_1) \quad \Big\| \quad Sa(V_0) \to 'Sa('V_0)$$

P∆10 11

$$\begin{array}{l|llll} & R(V, & V) & \Rightarrow & R \\ V & 0 & 1 & & 0 \\ S & \square\times\sigma & \sigma & & \sigma \end{array}$$

$Su(V)$

$P = 20$ to Sicherheit 3

$P_K = 60\,000$ kg.

$$P_K = \frac{\pi^2 E \cdot J}{l^2} =$$

$$J = \frac{P_K \cdot l^2}{\pi^2 E} = \frac{60\,000 \cdot 200^2}{\pi^2 \cdot 2{,}1 \cdot 10^6} = 116 \text{ cm}^4$$

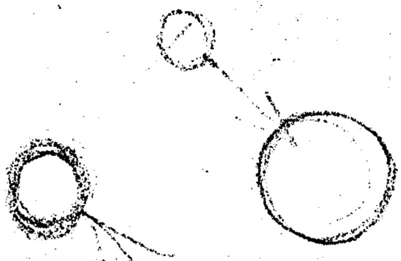
Rohr 100 × 10 .

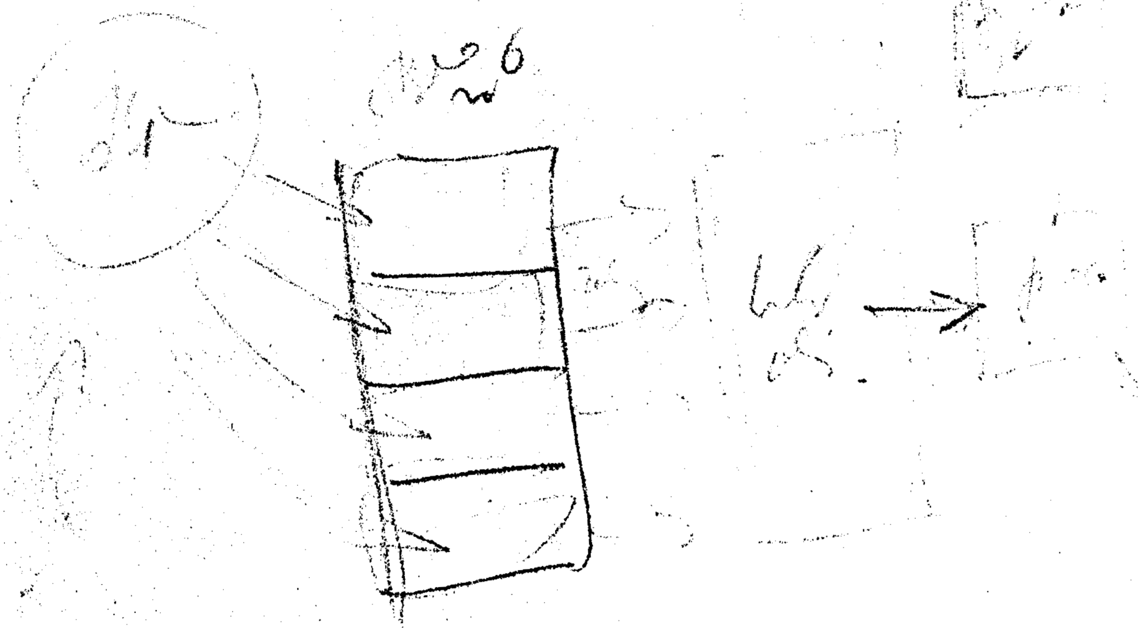
$$J = \frac{10^4 - 8^4 \; \pi}{64} = 290 \text{ cm}^4$$

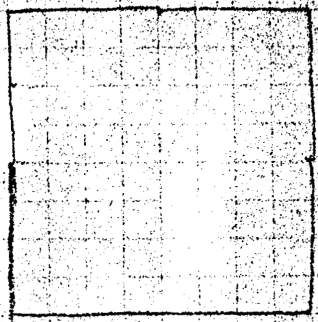
90 × 10

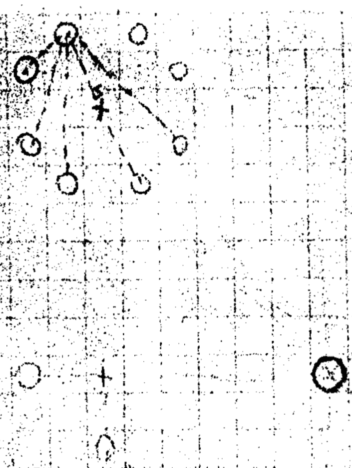
$$J = \frac{9^4 - 7^4 \; \pi}{64} = 210 \text{ cm}^4$$

Rohr 90 × 10 ...









[illegible]: [illegible]
[illegible] [B, SL, T, D, K] 2) [illegible]
3) [illegible] a) [illegible]
b) [illegible]

[illegible]

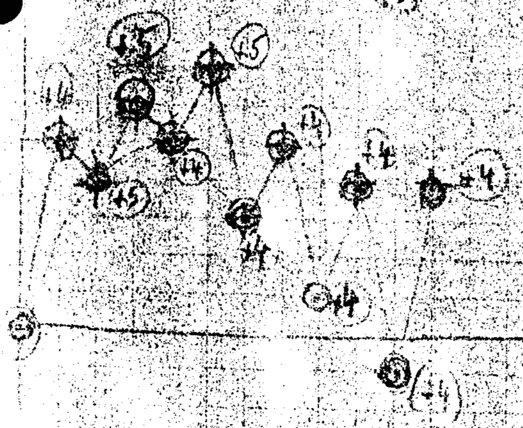
[illegible]

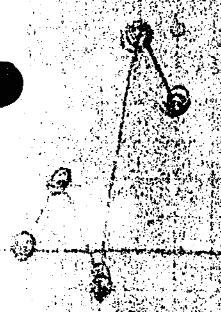
[illegible]

1) [illegible]
2) [illegible]
3) [illegible] 1), 2)
4) 21 [illegible]
5) [illegible]

W_1	1 1	S_1	1 2
W_2	2 1	S_2	2 2
W_3	3 4	S_3	3 2
W_4	4 4	S_4	4 3
W_5	5 5	S_5	5 5

$W_1 \to S_0$	S_0	
$S_1 \to W_1$	W_1	S_0
$W_2 \to S_1$	S_1	$S_0 - W_1$
$S_2 \to W_2$	W_2	$S_0 - W_1 + S_1$
$W_3 \to S_2$	S_2	$S_0 - W_1 + S_1 - W_2$
$S_3 \to W_3$	W_3	$S_0 - W_1 + S_1 - W_2 + S_2$
$W_4 \to S_3$	S_3	$-W_3$
$S_4 \to W_4$	W_4	$+S_3$
$W_5 \to S_4$	S_4	$-W_4$
$S_5 \to W_5$	W_5	
	S_5	$S_0 - W_1 + S_1 - W_2 + S_2 - W_3 + S_3 - W_4 + S_4 - W_5$





APRIL

S	M	D	M	D	F	S
—	—	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	—	—	—
—	—	—	—	—	—	—

KARFREITAG

11

April

MAI

S	M	D	M	D	F	S
—	—	—	—	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
—	—	—	—	—	—	—

[illegible]

1) [illegible] 20^2
a) [illegible]
b) [illegible]
c) [illegible]
d) [illegible] [[illegible]]
2) [illegible] 20^2: [illegible]

[illegible]

1) [illegible]
2) [illegible]
3) [illegible]
4) [illegible]
5) [illegible]
6) [illegible]
7) [illegible]
8) [illegible] [[illegible]] ? 3) [illegible]]

[illegible]

1) [illegible]

2) [illegible]

[illegible]:

1) [illegible]
2) [illegible]
3) [illegible]
4) [illegible] a) [illegible]
   b) [illegible]
5) [illegible]
6) [illegible] 1–4) [illegible]

[illegible]

1) [illegible] A [illegible] B. B [illegible]. A → B
2) [illegible] A [illegible] B [illegible]. B [illegible]

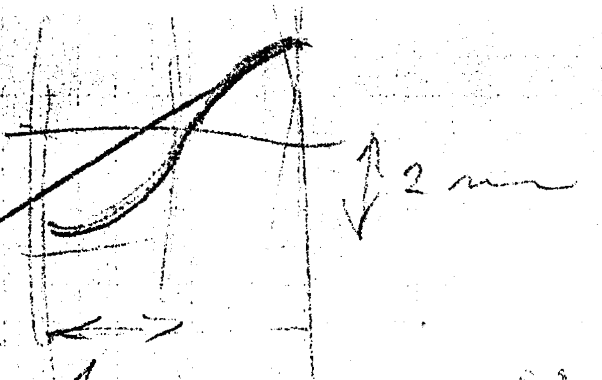
A → B ← B

A [illegible] B [illegible]

[illegible] B [illegible] A.

3.) [illegible]

$s = 4 \text{ mm}$



$s = \frac{b}{2} t^2$

$b = \frac{2s}{t^2} = \frac{2 \cdot 0,2 \cdot 80^2}{1}$ $\quad \frac{1}{80}$ sec..

$0,4 \cdot 6400$

$2560 \frac{\text{mm}}{s^2} \approx 2,5\, g$