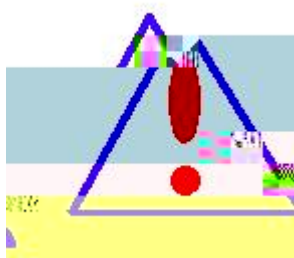


$\bar{y}$ $\tilde{E}^{\circ}$ $\hat{A}$ Δ a η $\parallel$
 a $\tilde{y}$ $\sim$ $\uparrow$ a η $\hat{A}$



$\neq \hat{A}$

$\hat{A}$

$\parallel$ $\mathfrak{b}$ $\tilde{E}^{\circ}$
 a η $\sim$ $\mathfrak{b}$ a $\tilde{y}$
 $\mathfrak{b}$ $\tilde{E}^{\circ}$ $\mathfrak{b}$ $\tilde{E}^{\circ}$ $\mathfrak{b}$ $\tilde{E}^{\circ}$



$\mathfrak{b}$

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$$\|D_\rho\| \leq 1$$
$$\mathcal{H} \parallel \mathcal{D}_\rho \quad 1$$
$$1 \leq \|\mathcal{D}_\rho\| \leq \frac{1}{r} \leq \frac{1}{\tau_H}$$

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3 à L

$$4 \leq \| \mathcal{D}_\rho \| \leq 1$$
$$\mathbb{D}_p \cong \mathbb{D}_p \oplus \mathbb{D}_p$$
$$1 \rightarrow \mathcal{D}_p \rightarrow$$
$$2 \leq \| \mathcal{D}_\rho \| \leq 1$$
$$3 \leq \| \mathcal{D}_p \| \leq 1 \quad \text{b} \quad :$$

4 à b

$$\parallel \mathcal{D}_p \quad 1$$

1		
	$\begin{matrix} \grave{a} & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \\ \parallel \mathcal{D}_p & 1 \eta & \sim \end{matrix}$
	$\begin{matrix} \grave{a} & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \gamma \acute{e} \\ & \acute{e} & 1 \grave{a} \epsilon \\ \parallel \mathcal{D}_p & 1 \eta & \sim \end{matrix}$
	$\begin{matrix} \sim & \check{\phi} \\ & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \gamma \acute{e} \\ & \acute{e} & 1 \grave{a} \epsilon \\ \parallel \mathcal{D}_p & 1 \eta & \sim \\ , \end{matrix}$
	$\begin{matrix} \grave{a} & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \\ \parallel \mathcal{D}_p & 1 \eta & \sim \end{matrix}$
	$\begin{matrix} \grave{a} & \check{\phi} \\ & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \gamma \acute{e} \\ & \acute{e} & 1 \grave{a} \epsilon \\ \parallel \mathcal{D}_p & 1 \eta & \sim \end{matrix}$
	$\begin{matrix} \gamma & \grave{a} \\ & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \gamma \acute{e} \\ & \acute{e} & 1 \grave{a} \epsilon \\ \parallel \mathcal{D}_p & 1 \eta & \sim \\ , \end{matrix}$
	$\begin{matrix} \gamma & \grave{a} & \check{\phi} \\ & \vee \end{matrix}$	$\begin{matrix} \tau \grave{a} & ' & \gamma \acute{e} \\ & \acute{e} & 1 \grave{a} \epsilon \\ \parallel \mathcal{D}_p & 1 \eta & \sim \\ , \end{matrix}$

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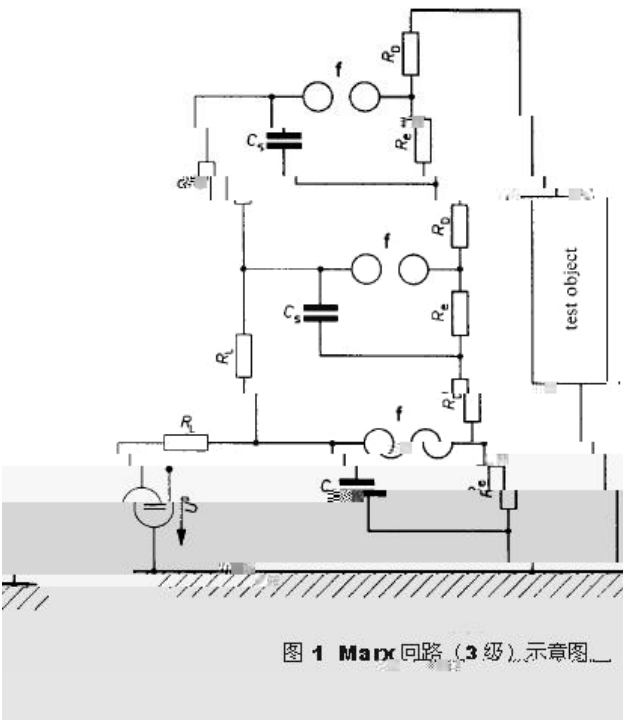
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 $\acute{\text{ı}}$ 1 ă ε
 || $\mathcal{D}_p$ 1 η ~
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 $\acute{\text{ı}}$ 1 ă ε
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	$\ddot{a}$	$\ddot{a}$ γ $\ddot{a}$ ε $\parallel \dot{D}_p$ η
	$\ddot{a}$	$\ddot{a}$ γ $\ddot{a}$ ε $\parallel \dot{D}_p$ η
	$\ddot{a}$	$\ddot{a}$ γ $\ddot{a}$ ε $\parallel \dot{D}_p$ η

$$\begin{aligned}
 & \parallel \dot{D}_p \quad 1 \quad \parallel \quad 1 \quad \hat{A} \quad \tau \sim \\
 & \parallel \quad 1 \quad \sim \quad \gamma \quad \mid \quad \hat{A} \quad \psi \neq \\
 & \parallel \quad 1 \sim \quad \ddot{3} \psi \quad \neq \quad \parallel \quad 1' \quad \ddot{1} \\
 & z \quad \tau \quad \tau \quad \dots \quad \textcircled{P} \quad \neq \quad \ddot{3} \psi \quad \parallel \quad 1 \quad \hat{A} \quad \neq
 \end{aligned}$$



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 ψ $\mathbb{M}$ η $\parallel \mathcal{D}_p$ 1 $\hat{\mathbb{A}}$ $\bar{\mathbb{W}}$
 Ξ $\mathbb{H}$ $\hat{\mathbb{A}}$
 ψ $\mathbb{M}$ $\parallel$ 1 $\mathbb{M}$ 1923 $\bar{\mathbb{U}}$ Marx
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 $\mathbb{M}$ $\mathbb{H}$ $\mathbb{M}$ $\mathbb{U}$ 3 f ψ
 $\sim$ $\mathbb{M}$ $3\mathbb{U}$ $\parallel$ 1 $\hat{\mathbb{A}}$ α $\mathbb{T}$
Marx $\mathbb{M}$ $\sim$ p $\mathbb{M}$ $\hat{\mathbb{A}}$
 $\parallel \mathcal{D}_p$ 1 $\sim$ $\bar{\mathbb{U}}$ $\mathbb{M}$ $\parallel$ $\sim$ p
 $\sim$ τ $\%$ $\%$ $\sim$ $\mathbb{H}$ $\mathbb{M}$ γ $\mathbb{M}$ 3 $\parallel \mathcal{D}_p$
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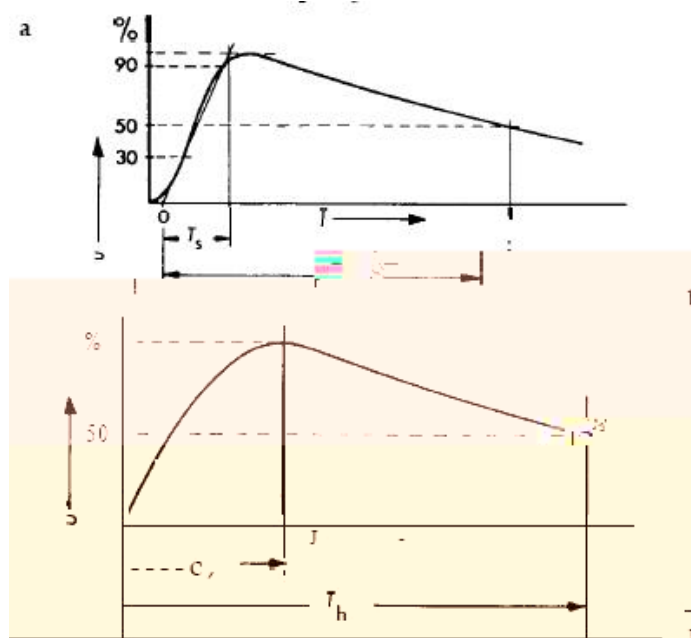


fig. 4 Standardized test waveforms
 a) Switching impulse voltage 1.2/50
 Front time: $T_s = 1.2 \pm 0.36 \mu s$
 Time of half value: $T_t = 50 \pm 10 \mu s$
 b) Switching impulse voltage 250/2500
 Front time: $T_{gr} = 250 \pm 50 \mu s$
 Time of half value: $T_h = 2500 \pm 1500 \mu s$

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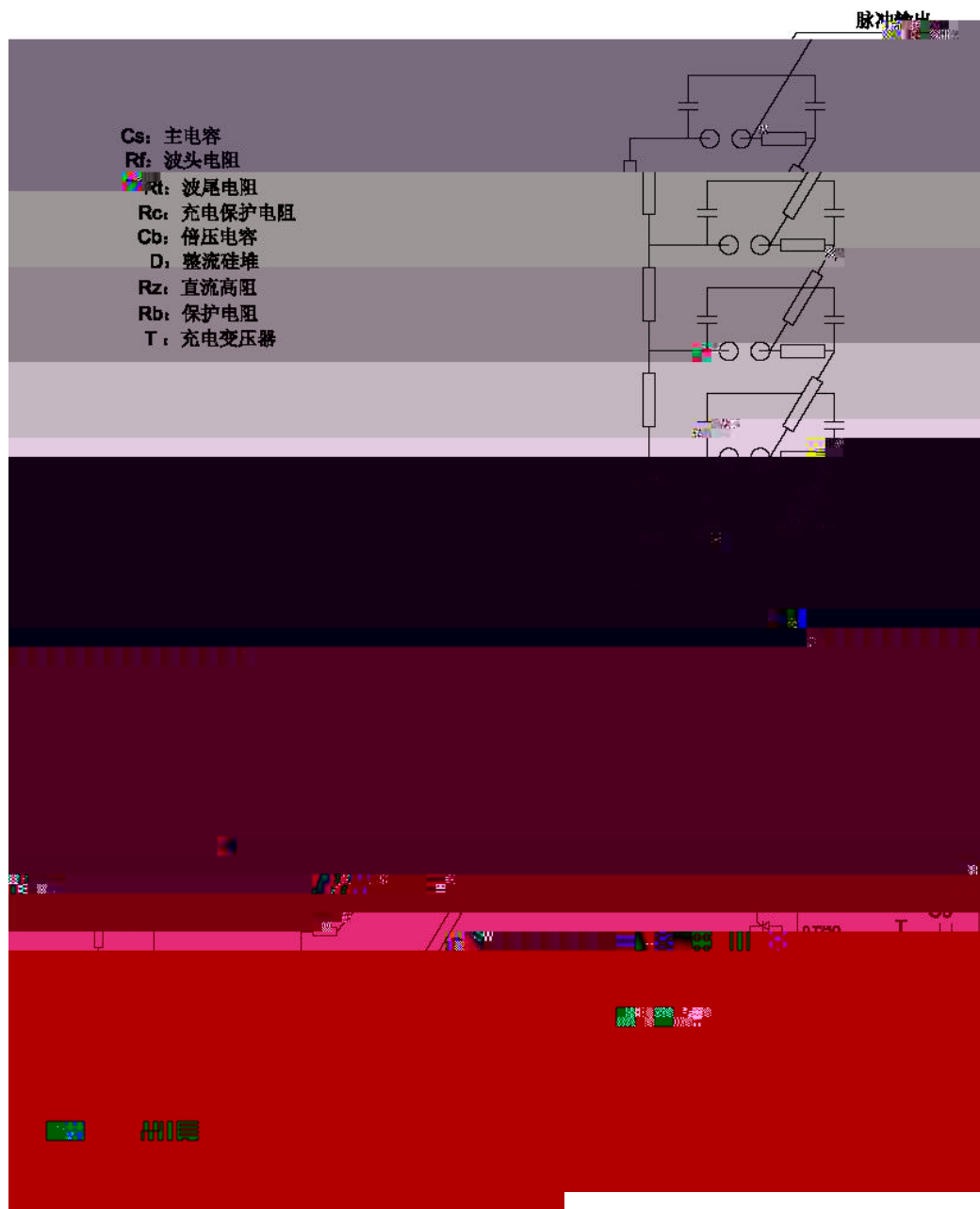
$$\begin{matrix} & \mathfrak{D}^b \\ \mathfrak{i} & & \mathfrak{r} \end{matrix}$$
$$\mathbb{D}^{\frac{n}{2}}$$


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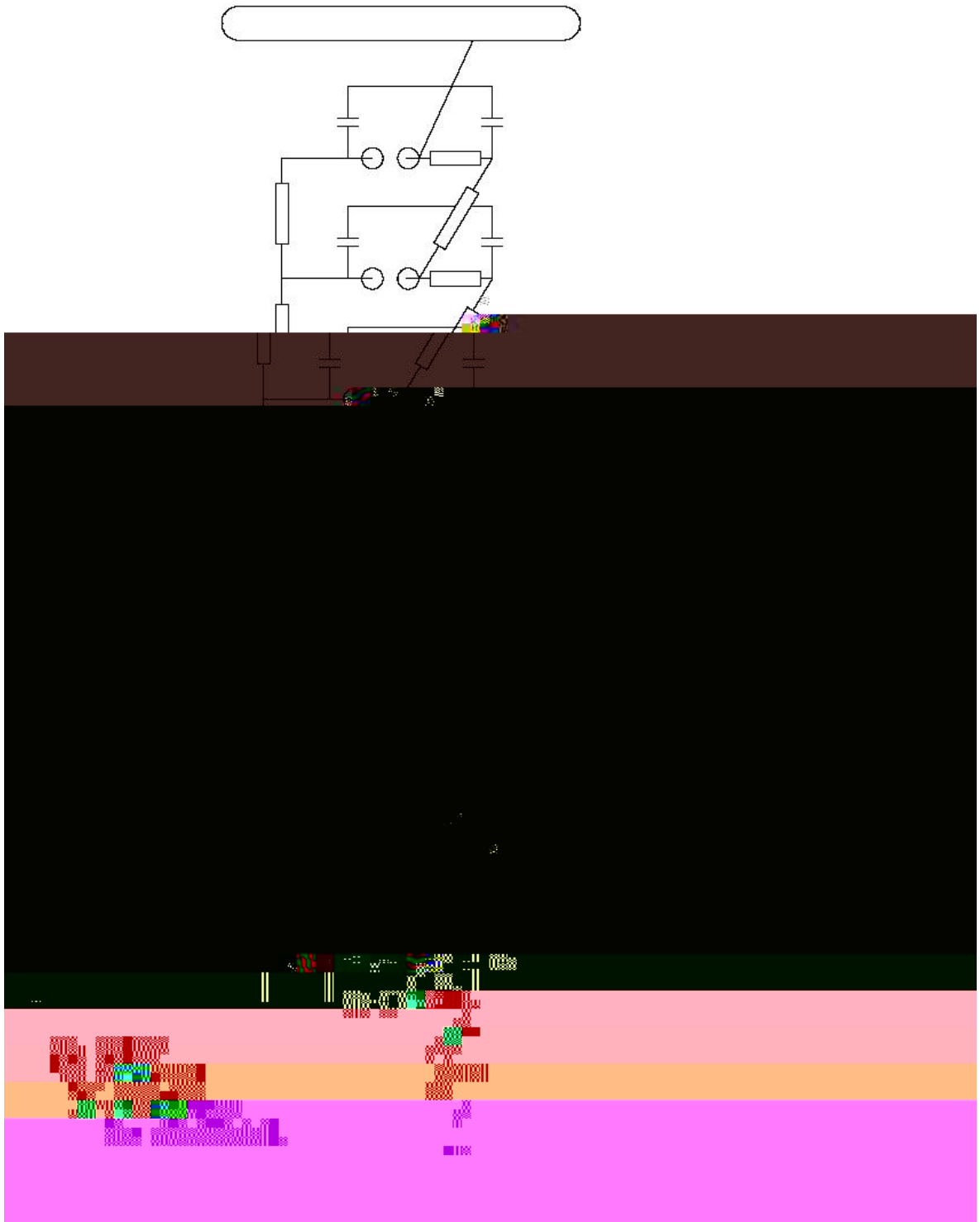
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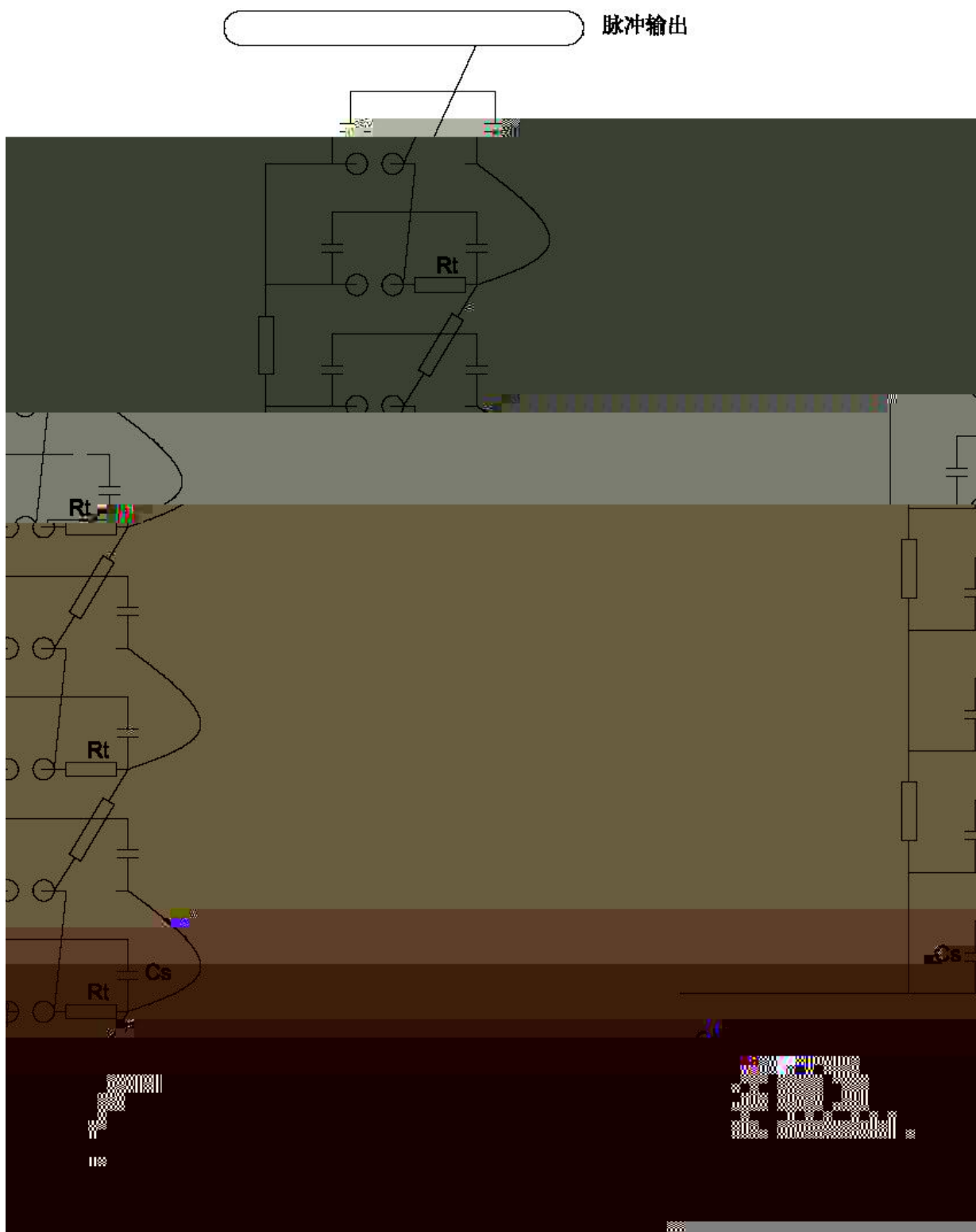
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$$1.1 \quad \parallel \mathcal{D}_\rho \quad \perp \quad \vec{0} \quad \quad \quad r \quad \vec{l} \quad \quad \vec{\tau}_H \quad \perp$$

$$\begin{array}{c}
 1.2 \quad \parallel \mathcal{D}_\rho \quad 1 \quad \tilde{U} \quad r \\
 \parallel \mathcal{D}_\rho \quad 1 \quad \tilde{U} \quad r \quad \Psi \quad \dot{\rho} \quad a \quad \sim \quad \hat{\otimes} \hat{\otimes} \\
 \hat{A} \quad \tilde{U} \quad 3 \quad \sim \quad \sim \quad \varepsilon \quad \hat{A} \\
 \tilde{U} \quad \bar{W}^{\approx} \quad \gamma \quad \sim \quad \parallel \mathcal{D}_\rho \quad \sim \quad \Psi
 \end{array}$$

$\parallel \mathcal{D}_p$ $\downarrow \tilde{u}$ τ $\hat{A}$ r $\sim$ $\dot{r}$ $\hat{a}$
 r $\sim$ $\downarrow a$ γ $\tilde{H}$ $b^\sim$ $\downarrow \tilde{z}$ a $\hat{A}$
 $\tilde{u}$ $\odot$ a $\hat{A}$
 $L^\sim$ $\dot{r}$ $\hat{A}$ $\tilde{u}$
 H H $\hat{A} \tilde{H}$ $\uparrow$ $\bar{w}^\sim \hat{A}$
 $\tilde{H}$ $\wedge$ $\downarrow \dot{r}$ $\downarrow \hat{a} \hat{O}$ $\downarrow \hat{a}$ $\downarrow \sim$ $\hat{O}$
 $\downarrow \hat{A}$ $\downarrow \bar{w} \otimes$ $\odot$ $\bar{w} \otimes \downarrow$
 $\downarrow \sim$ $\dot{r}$ $\dot{r}$ $\hat{A}$ $\bar{w}_7$ $\bar{G}$ $\downarrow \nexists$ $\parallel$
 $\mathcal{D}_p$ $\downarrow \tilde{u}$ $\bar{w}$ $\hat{A}$ G $\tilde{H}$ $\downarrow$ $\downarrow \tilde{z}$
 $\otimes$ $\odot$ $\hat{A}$
 $\tilde{u}$ $\tilde{u}$ $\tilde{u}$ $\tilde{H} \bar{w}$ a_H $\hat{A}$
 $\tilde{H} \bar{w}$ $\hat{\hat{\hat{A}}}$ $\hat{A}$ $\tilde{u}$ $\parallel$ $\bar{w} \otimes$ $\sim$
 $\dot{r}$ $\parallel$ $\downarrow \hat{A}$ $\parallel$ $^\circ$ $\hat{A} \bar{w} \otimes$ G $\tilde{u}$
 $\parallel$ $\tilde{u}$ $\odot$ $\hat{A}$
 $\mathcal{H} \mathcal{Z}$ $\bar{G} \tilde{u}$ η $b^\sim$ $\mathcal{L} \mathcal{Z} \bar{w} \otimes$ $\hat{A} \bar{w}$ $\tilde{u}$
 $\tilde{u}$ $\sim$ $\tilde{r} \Psi$ $\bar{w} \otimes \tilde{H}$ $\sim$
 $\parallel \mathcal{D}_p$ $\tilde{H} \bar{w}$ $\hat{A}$
1.3 $\parallel \mathcal{D}_p$ $\downarrow \tilde{u}$
 $\hat{a}^\sim \Psi$
 $\parallel \mathcal{D}_p \tilde{u}$ n Ψ $\sim$
 $\tau^\sim \sim \gamma$ $\nexists$ $\downarrow \hat{A}$ $\tilde{H}$ $\hat{A}$

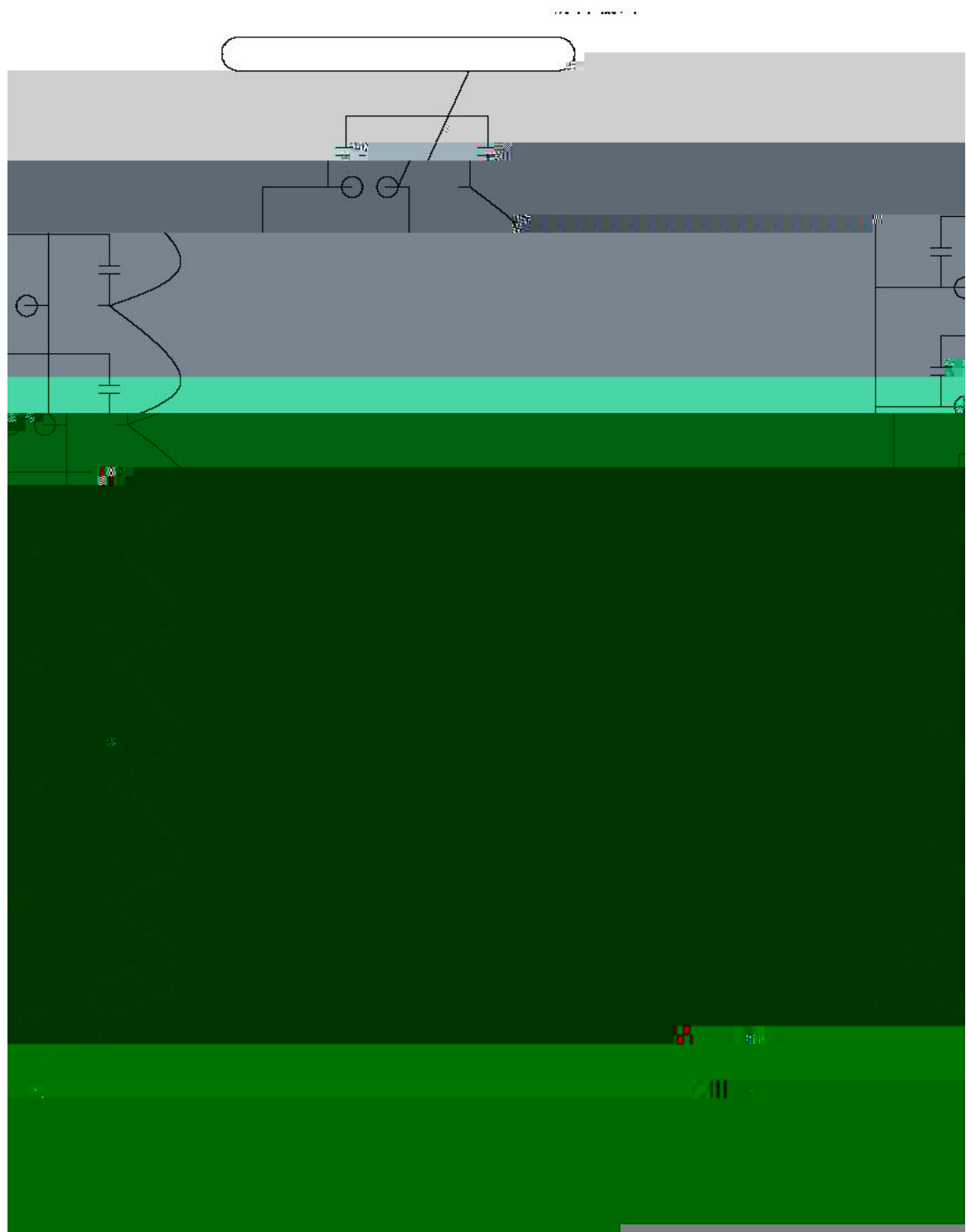


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$$\begin{array}{ccccccc}
 \bar{w} & \dot{t} & 1 & \parallel \mathcal{D}_p & \tau & \psi & \\
 7 & & & & \tau & \ddot{u} & \sim \infty \\
 \mathbb{F} & \hat{A} & = & \hat{A} & & & \\
 \mathbb{F} & \hat{A} & \check{y} & \hat{A} & & &
 \end{array}$$



$\eta \quad \parallel \mathcal{D}_p \quad \mathcal{V} \quad L w \quad \hat{A} \quad L \quad L \quad \sim \quad \uparrow \quad \mathfrak{b} \quad \mathfrak{y}$
 $\text{"H} \sim \quad \mathfrak{h} \quad \mathfrak{b} \quad \mathfrak{y} \quad \text{"H} \mathfrak{H} \quad \mathbb{N} \mathfrak{o} \quad \sim \quad L \quad \ddot{\mathfrak{U}} \quad \text{"H}$
 $\sim \quad \mathfrak{h} \quad \mathfrak{b} \quad \mathfrak{y} \quad \text{"H} \quad L \quad \mathfrak{p} \sim \quad \mathfrak{H} \quad \mathfrak{H} \quad \mathfrak{Q} \quad \sim \quad \mathfrak{i} \quad L$
 $\mathfrak{H} \quad \hat{A}$

3.1 $\mathfrak{D} \quad \mathfrak{H} \quad \downarrow \text{'}$

$\mathfrak{D}$	w	β
L	$L \quad \mathcal{V} \quad L \quad \mathfrak{D}$	$\ddot{\mathfrak{U}} \quad \mathfrak{r} \quad \odot$
$\parallel \quad 1$	$\ddot{\mathfrak{U}} \quad \mathfrak{r} \quad \ddot{\mathfrak{U}}$	$\ddot{\mathfrak{U}} \quad \mathfrak{r} \quad \odot$
	$\ddot{\mathfrak{U}} \quad \parallel \quad \mathfrak{A}$	$\ddot{\mathfrak{U}} \quad \bar{w}$
$\mathfrak{I} \quad \mathbb{N} \mathfrak{o} \quad \mathfrak{A}$	$\ddot{\mathfrak{U}} \quad \ddot{\mathfrak{U}} \quad \text{'}$	$\ddot{\mathfrak{U}} \quad \mathfrak{r}$
$\mathfrak{A} \mathbb{N} \mathfrak{o} \quad \mathfrak{A}$	$\ddot{\mathfrak{U}} \quad \text{"H} \quad \mathfrak{A}$	$\ddot{\mathfrak{U}} \quad \mathfrak{r}$
$\parallel \quad 2$	$\ddot{\mathfrak{U}}$	$\odot$
$\mathfrak{c} \quad \mathfrak{b} \quad \mathfrak{y} \quad \text{"H}$	$\mathcal{V} \quad L \quad \mathfrak{D} \quad \mathfrak{a} \quad \mathfrak{A} \quad \sim$ $\mathfrak{i}$	$L \quad \odot$
$\mathfrak{h} \quad \mathfrak{b} \quad \mathfrak{y} \quad \text{"H}$	$\mathcal{V} \quad L \quad \mathfrak{D} \quad \mathfrak{a} \quad \mathfrak{A} \quad \sim$ $\mathfrak{i}$	$L \quad L^{\mathfrak{z}} \quad \odot \quad \hat{A}$
$2 \quad \mathfrak{Q}$	$L \quad \mathfrak{h} \quad \mathfrak{b} \quad \mathfrak{y} \quad \text{"H}$	

3.2 L $\check{\alpha}$

τ_{H}	1'	0~100.0kV
	$\mathfrak{b}$	10.0~100.0kV
	$\mathbb{Z}$	$\mathring{\text{U}} \approx 1\%$
	$\mathfrak{b}$	$\mathring{\text{U}} \approx 1\%$
	No	0.1kV
τ_{H}	'	30~180s
	No	1s
		2s
ν 1	'	1~999
$\bar{\text{G}}$	'	$\bar{\text{G}}$ $\nu \sim$
	1 $\bar{\text{G}}$	$\nu \sim$
	τ_{H}	$\bar{\text{G}} \sim$
$\mathbb{F} \parallel \mathcal{D}_p$	'	G 99%

3.3 L h w $\mathfrak{Y}'$

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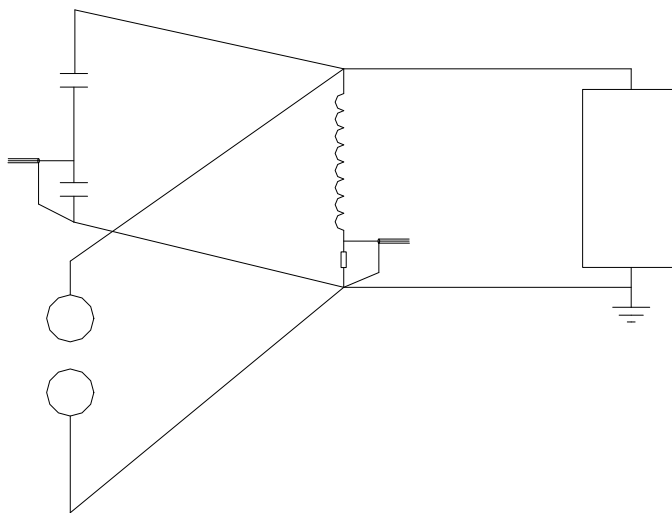
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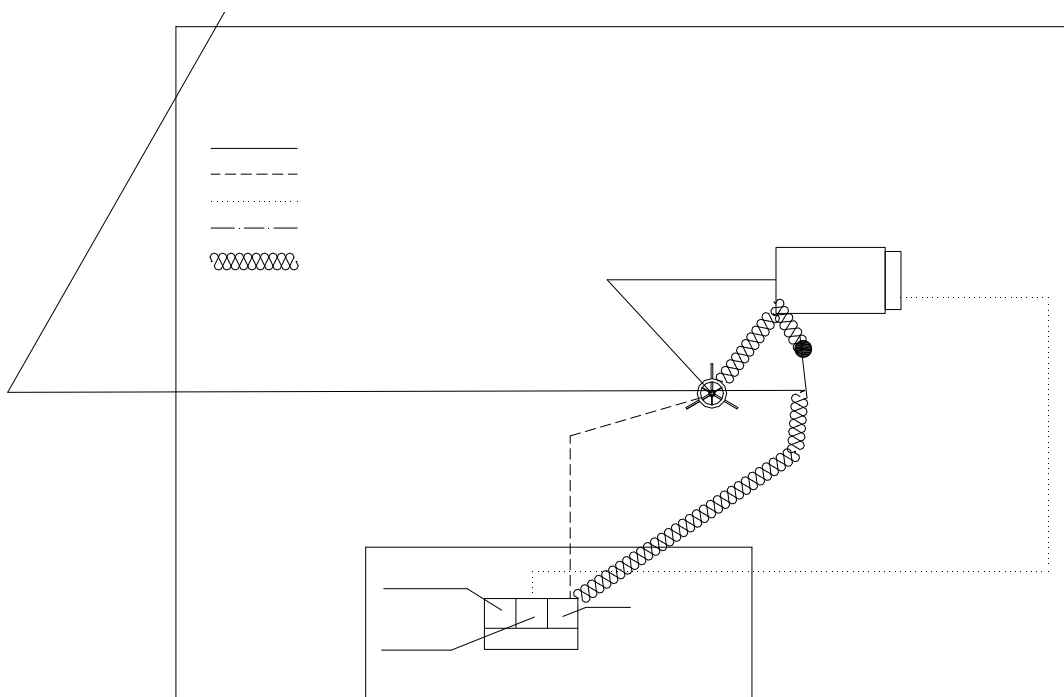


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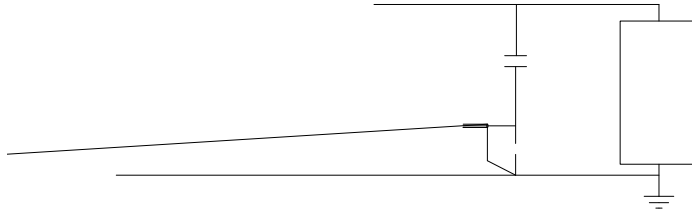
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$$2 \, \tilde{a} \parallel \mathcal{D}_p \quad 1 \quad 1 \quad \tilde{v}$$
$$\begin{array}{c} \parallel \mathcal{D}_\rho \quad 1 \quad 1 \\ \text{ĩ} \quad 1 \quad \text{ũ} \quad \text{œ} \quad \text{đ} \quad \hat{A} \end{array}$$

2.1 à 1 v'

[illegible]

$$UP = UC * n * \alpha$$

$$\text{UP} \quad \parallel \quad \mathcal{D}_\rho \quad \perp \quad \mathcal{V}$$
$$UC \parallel \mathcal{D}_\rho \perp \vec{U} \quad \vec{H} \perp \hat{\cdot} \quad \sim$$
$$n' \parallel \mathcal{D}_\rho \perp \vec{U} \quad a$$
$$\mathfrak{a}' \parallel \mathcal{D}_p \quad \perp \quad \vec{u}$$

2.2 à 1'

$$\| \mathcal{D}_\rho - 1 \|_{\infty} \leq \int_0^1 \left(\frac{1}{2} \|\mathcal{D}_\rho - 1\|_{\infty}^2 + \frac{1}{2} \|\mathcal{D}_\rho - 1\|_{\infty}^2 \right) dt = 0$$

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$\neq$ $\neq$ $\sim$ $\parallel \mathcal{D}_p$ $\downarrow$ $\neq$ $\mathfrak{L}$ $\grave{a}$
 $\mathfrak{D}$ $\sim$ $\check{\mathfrak{l}}$ $\mathfrak{r}$ $\mathfrak{r}$ $\neq$

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4.1 $\mathcal{D}_\rho \sim \mathbb{L} \oplus \mathfrak{b} \oplus \mathfrak{h}$

4.2 $\mathcal{D}_\rho \ddot{\alpha}$

$$\parallel \mathcal{D}_\rho$$
 $\parallel \mathcal{D}_\rho$

1 v

$$\begin{array}{ccccccc} \mathbb{N}_0 \setminus 1 & & \mathbb{N}_0 \setminus 1 & \wedge & \sim \mathbb{N}_0 \setminus 1 & & \mathbb{N}_0 \setminus 1 \quad \sim \\ \vdots & & \vdots & & \mathfrak{p} \sim & & \end{array}$$

$$\begin{array}{ccccccc} 4.3 & & \check{\alpha} & \sim & \mathcal{D}_\rho & \check{\mathfrak{U}} & \sim \updownarrow \\ & \%_0 & & \parallel & \hat{A} & \check{\mathfrak{U}} & \check{\mathfrak{U}} \sim \\ & \neg & \mathfrak{D} & \int & & \sim \sim & \gamma \parallel \vee \grave{a} \\ & \grave{a} & & & \check{\alpha} & \hat{A} & \end{array}$$

$$4.4 \quad \mathcal{D}_\rho \bar{G} \quad \sim \sim \gamma \quad \quad \quad \odot \hat{A}$$

$$\begin{array}{ccccccc} 4.5 & \mathcal{D}_\rho & \sim \sim & \gamma & & \mathfrak{F} \sim & \mathfrak{D} \neg \\ & & & & \mathfrak{F} \hat{A} & & \end{array}$$

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$$3\bar{a} \ a \quad \bar{w} \quad \sim \quad \chi \quad D^- \quad N_0 \quad \psi \quad \hat{A}$$
$$\begin{array}{ccccccc} 4\tilde{a} & 1 & \tilde{1} & 1 & \top & H & \sim \odot \\ & \tilde{G} & ' & \tilde{i} & \sim & \neq & \sim \downarrow \\ & & & \hat{A} & & & \downarrow_r \sim a \end{array}$$

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$$6\tilde{a} \quad \parallel \quad \mathfrak{b} \mathfrak{b} \quad \sim \quad \parallel \quad \mathfrak{y} \quad \tilde{a}$$

$$, \quad \sim \quad \mathfrak{z} \quad \gamma \quad = \hat{A}$$