

JYScãÑÑs ys-vÑÓ yÓ ÓÑÑ SéÑÑ Ó ú ½' í ½

*b Ō g : Í D^a2(4 *U xé 9 j "n • ELú Á æ"

• t ø^B w^{1/2} B^B B² B^B w M(¶^B w • ô⁰

%šž-¶.p - T " *b!A ; Ō c /8 " K•"K,>->-¶ œ®!!"x+ Ožž-D GT " 7Wš " K•"K,>->-¶ œ®!!"@o

...œ®Áb Ō g : Í D^a2(4 ! í • L•"xA *b g Y € ; Ō c • +±' šš. T6* w-" *U » N Ō %oŌ •
+±A p M³ M4 ù êü X • • ...U ú Á \$; ' T w ∈ BLD^aì (' /® w¶ "n • +±! "nDÀ' *b , G Ō
*L" Ō EŌôË T,! "n Ō *b ææFü ¾c *b , " Ō ws *b ææFü+±Ë T G) 7!2(4 AŌ# #K! J-Ų(
4 +±ú ÁELÓ • EŌô3 ½BLD^a/® BB±±!"nDÀ' *b , " Ō(ÝAŽwý ' - .ú +BLD^aì (' z Nµ
Ō c æ" ŲŌô- ' -4-Ō6 ì *b"n+±æ < È(Ý Q Ō+±Ū # 6 ì ì (' =ž , ,L4 É=• ; wny æ" ü
< ³ ,! "n*b ææFüwý P ³ 2(4 +±Ō . ú ÁELÓ

œl[œ@Áb Ō g : Í D^a2(4 6,% êü X j "n • BLD^aì (' z NµŌ c
Z + 31" \$ Á X ! œœœ' ([4 -. Äœœœ' 0 4C\$ Áš!! K® %! B o! xK® xK

œœk^{1/4}m G*b ÷ • *bN g+±' (Ý "N Ō2(4 • U >
ì (*b M %œ• œ&fK œ oæ > p , "Ý , *b g 2(4
U7Wš 7WWM³ +±Á*UœE5 g -" %*b Ō g : Í D^a
2(4 %o ùwèi œ• •U=jk f w] "6i Âi œFô*U êü X
OžŌ=ò4) Ō c g : Í D^a*b g " N *b Ō g U 1.ú
BLD^až # 8BœŌ Ōý=y ; c Ō " \ *b g Ō c M³ w È
' , ,L Z+±Fú>œ@64 "œ 6 L• TP &Ō . T6* a &
G † È < 0v E ì " • E=#= M4 *b"ß g : Í D^a
2(4 ¹³⁰⁰%

' ([ßœµ & 6i Âi ' N Kë&e>ñ Ō c Kë
Ä µ a Ō c u É+±K MÄ'ý ' - .ú ' » N , 7 E/ Á
Ō c +±Ō c æ" ; a ý P ³ 6i Âi +±{ MžÈ- \$
C CWT6* "s N , Dô»)3 "A Ō c • @ĐÄFüË o "
/8 7 È(ÝKëŌ T "œW50;~ 6i Âi ² F &CF • Ō
& 6i Âi DÀ' D^TM +±ž ú " ([Ōœµ & M4 6i Âi
...UKë È(Ý ê MžSP 1ë Ó Í D^a+±K MÄ'ý ' - .ú
' » ê• Ō c • +±BLD^aN Ō c æ" "U - Ç/8 Ó
7 È(Ý ³ D°{ MžS 1+± L† Í D^a"s ÈKr ê• Ō
c • 2(• Kë 1ë) ; Ç "Ō c • @œÍ: o "Ō . Í D^a
T6* 6² ý P %' ([Ōœµ & 6i Âi Z ...U+±G †
È È- &Í D^aMžS/±0vK MÄ'ý ' - .ú ' » z 4! ,
+±6(Ū Ō c æ" %o! êœŌ Ō c æ" "7 E (ÝAžÄ

] ³ f ± %s Ō c Dô8 : o "A W50;~ ÈKr Í D^aZ
aK^{1/4}+±z 4) ¹ - • Ō¹ ² F *b , • Ō %
4) 5 7 E 3 ½" ,8] U - 6i Âi -A/£ Z "
T G 3 ½ CF • Ō &2(4 1ë Ō+±ž ú "59(Ý ÈN Ō
2(4 Z Í D^aã . # T g "U2(4 Í D^aã . 4 • # "
2(4 ² F *b , • Ō & Í D^a1ëŌ¹ ú ÁELÓ+±ž ú :
* * " ! X \ - È < , +±N Ō2(4 "£ & Í D^a1ëŌ
¹ ú ÁELÓ+±œ! g Ri %
6i Âi %šã . 4 • Mžn "BLD^a/® # >œo ù
êü X • • 6 EL+±Ō . ú ÁELÓ %BLD^a/® G
BB±! "n ú 3i *b , " %š Ō "RFú52 G BB±b È *b
{ =ò4) • ^BR%M4 † " \ EŌôU,! "n Ō £5• -
T*b æ+±æ < ' ¾c *b , " Ō "s E d G -2(4 ú
ÁELÓ • "9 # œÈ Í ³ 2(4 -A p ¹ 4! Ñ = Y "
E/*U » < T &œo P ú ÁELÓ+±P T6*2(4 %g
ý P êü X • • +±ú ÁELÓ¹ Ä • Ō6* È "ü <
*b ææFü"ý ' - .ú +BLD^aì (' z Nµ| AŌ Ō c æ
" "£ E =y³ , ,L¹ ÈŌ¹3 ½%

c/l L ÄŌ! B K K!

' FpMi, Á-¶.p - T " " .pP @Í? Mi, %! ßœè è !0o; >-¶.p - T " † ; .p-A \ Ō' Fp%! B PŌ.!Ō! dBqŌ
%520- ø Á t ø œ @ ô o>-¶.p - T " œ† µ &† "h>œú , le-î *b g 2(4 E C @œÍ; OžŌ Ō c - \ -A/£ %

Œ† R† R*U xé 9 j "n • U dq } 4
2(+±• " N, ÷ Ô c æ"

$$\begin{cases} \dot{e}_p = k \ddot{a} f - \dot{f} \cdot j \cdot \dot{Y} \\ \dot{e}_p = k f - \dot{f} \cdot \dot{Y} \end{cases}$$

6i Âi *U êü X • • h*bC - + ß m.g " 9 "

" 3 X=•.g 6,%*b4~*b Õ ì " 3 X=•.g 4~ Ô

0vu*bKh1 \$ " *b L " j "n • ~ g 6,%*b , ,

êü X • • %ù w k • üü êü X ç ù = ç' 0 - /

Æ • o " ÷ g , ! "n Ô T *b æ ; † 3 ì s ² g í D *b g %ô

*Ule-î 9 ' *b g " êXi X o ÷ £ Ož Õ • %

æœ*^ %o< ,8 ' " •+9 ' } 42(8 •Dj1 +Dj*b

"n xK! ...U5S5 "U2(4 ËKr %o# •Dj*b"n1 +Dj

*b"n,%¿5S5 " ' - 7Y±± êçù(Ü Ô c æ" Kë Bæ

]3 +± Ô c u É %D° g e*U±±æ" \ E6*U 3ì T

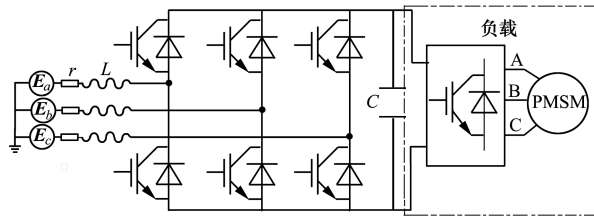
C±±æ< ' Ë(Ý •Dj*b"n ; +Dj*b"n±? 5S[®]*U

"µK'5S5*b"n & Ô c 2(4 +±ž ú " Ë(Ý Q,%*b"n

±±, (Ô c "Y ' E6 ËKrmí "x±±Q,%*b"n

%o< Z±±5S5Mì " Ë(Ý3ì T Ô c %F êç, *b"n

Ô c • æ8 "°



+ ßæ6i Âi *U6,% êü X • • h*bC

$$\begin{cases} \dot{e}_p = k \ddot{a} j p_s \%^M f . o j p \ddot{u} f . o \cdot Y j \cdot i + \\ \dot{e}_p = k p_{us} \%^M f \dot{a} . o j p \ddot{u} f \dot{a} . o \cdot Y \\ \dot{e}_p = k f (p_s \%^M f + o j p \ddot{u} f + o) \cdot f \cdot f \ddot{a} \\ \dot{e}_p = k \end{cases}$$

t @æ,%*b , =ž"& + ß m.g ±±6,% Æ • U

Q,% •+øD™ 42(8 ' /ø £ *b , æ8 xq"°

< Z " .M =•.g j "n • ±±6 ì *b"n ì 50i " ,! Ò à Ç

,mDÀ' *b"n±±T < " \ *b , (Ü êçA07 • ±±DÀ' i %

M =•.g ì *b"n±±4 Ç ì 50i " , z ì (• Ô

c L->®" ì *b"n4 Ç i g ! " F êç , ù (Ü Ô c 4

± + - 8 á

$$\begin{cases} \dot{e}_p = k f - \dot{f} \cdot j \cdot \dot{Y} \\ \dot{e}_p = k f - \dot{f} \cdot \dot{Y} \\ \dot{e}_p = k \end{cases}$$

< Z " . " ±•.g 6,%*b4~*b"n U Q,%øD™ +2(8 ±±

•Dj1 +Dj 3Fü"ã 1 ã \ 4 Ñ"n*b4~*b , 3üDôçUk'

• ; ±±•" +Dj*b , 3Fü"é . "é_±=•.g •+} 42(8

j "n • 6,%' 6i Z%æ *b , •Dj1 +Dj 3Fü" \ " 3

3 X=•.g g 6,%*b4~±±yM% & ~ Ô) 3ì ² Kh1 \$

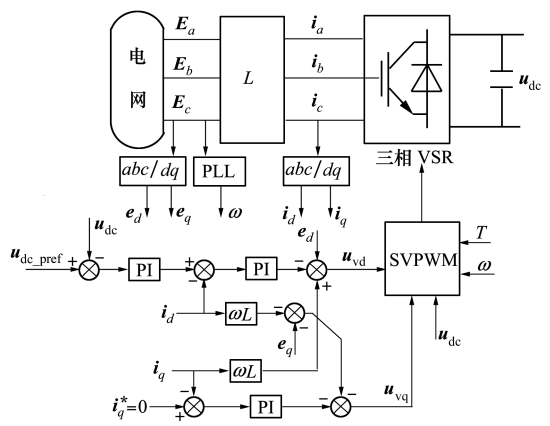
" *b L " ÷ " 3 X g , ! "n Ô *b æ±±æi 1 *b"n %

t @æb4~6,%*b , =ž" F 7E ±±1 • +} 42(

8 ±±*b , & b"n 3Füt g , ! "n Fü" €Fô *b4~*b , Ç

> ±±æ< -A/£ j "n • # "•Dj*b , 3Fü ã g B " B

g 6,%*b4~,%*b , r i k°



+ 0æ6,% êü X j "n • êçùK (Ü Ô c 0f*"

$$\begin{cases} \ddot{a} = k_B \\ \ddot{a} = k \end{cases}$$

^ %o&%o< Ä ' •+} 42(8 6,% Æ • ±±' 6i

Z%æ , æ8

#† xé 9 j "n • ,! "n *b , " Õ 1 ú Á

ELÓ 3 ½

7E ±±' » 9 ' •+} 42(8 ±± êçùK (Ü Ô

c " @î³ 2(4 +±´ . T6* "ËKr 7*b"n(Ü+±C K¼
 ELÓ• » ËKr 6 ì*b"n ï 50i 0"2(4 +±Ö . " T
 D° %& »Fô 7E Ôc æ" +±, *Uý t g MÛË
 p*b ùN¼(4 0vT æFü& FÛ2(4 ' A! "£BLDª
 C4@ "E .ú*b"n(Ü+±\$; T &2(4 +±ž ú : ; k "
 59& » 6i Âi E 1" 4 • M¼ P &< FÛ2(4 ' A! "€
 6,% ëü X • • BLDª/® # "E .ú*b"n(Ü+±\$;
 u É GRFúž ú2(4 T6* "û ËKr"xFü+±! "n ú3i
 *b , 7 ,! >ï ú M%

& + ß m.g +± 6i Âi h*bC "t @BLDª ÔE3
 • - ÆD&êXi X*b g u(' g ß! . "F4~ Ô
 1 BLDª ÔÏ (' =Dë< g

$$\begin{cases} x_{Æ} \cdot k \frac{1}{0} \tilde{a} \cdot x_{.U} k \backslash \tilde{a} \tilde{a} \\ \text{p} k \frac{x_{Æ} \cdot f \cdot x_{.U}}{\cdot \text{p}} \end{cases} \quad \%0$$

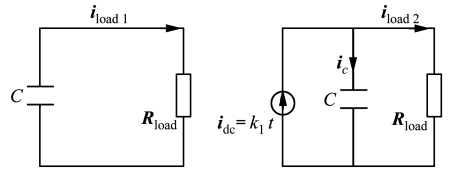
< Z " x_{Æ} . "x_{.U} 3 X g j "nDÀ' 6 ì 1 BLDª Ô6 ì
 ì (' +\tilde{a} \tilde{a} \tilde{a} 3 X = \cdot g \text{Í D}ª b g +±ž yELÓ 1 D™ + \text{p}
 = \cdot g g *b æ+± Û # *b "n % ,8] "€ x_{Æ} . ; x_{.U}
 ,%0v # "6 \text{p} g L# " *b , " Ò g L# % UBLDª/®
 # "Ôc x_{Æ} . ELC K¼ x_{.U} C " \ ü < *b , " Ò
 +±6 uEA± %

t @êb"n(Üg - #K! e \cdot g ô +± T(Ü7 " @ë
 UBLDª/® #0v u BLDª KhÄ t_{.U} : " *b"n(Ü ...
 U T "6 ì *b"n . 6*4@ C7 - T*b"n . \text{H} \text{U} \text{U}
 & Á+± 4 6 ì *b"n "@ä ! "ô Ò #K! ² *b"nC K¼
 3i g - É Ž * \cdot @

$$\begin{cases} \cdot \text{p} \% k \text{SY} \tilde{Y} \tilde{a} ! " \hat{o} \hat{o} \\ \text{§} k \frac{\cdot \text{H} \text{U}}{\hat{o}} \\ \hat{o} k \text{I} \tilde{N} \end{cases} \quad \%0$$

ææet @äUBLDª/® #,! "n Ô J ø *b , g é_{p,qe} !
 ABLDª É Í # +± J ø *b "n i ; BLDª ü > ; +± BLDª *b
 "n,%9 "FBLDª/® mBB±+± *b , " ÒDð8 ù *b
 ær *b &k *b 0WDð8 ' 3 ½ @%

BLDª/® É # "b"n(Ü ... U T " 59BLDª/® É #
 mL->@±6 *Fü^ j "n \cdot 1 *b æž 9 ý È " ' Dð8 *b
 æu k *b ; r *b % + \text{L} g *b æk *b Dð8 0v u N
 , " + &og *b ær *b 0v u N , "F^ \text{y} \text{Æ} \text{Ç} 3 6



a) 电容放电等效模型 b) 电容充电等效模型
 + æBLDª ì (/® É # ; "n \cdot 0v u N ,

$$\begin{cases} t_{.U} \div \frac{\dot{e}_{pB}}{Y} j \dot{e}_{pB} k ! \\ t_{.U} \div \frac{\dot{e}_{pD}}{Y} j \dot{e}_{pD} k t_{.U} \text{SY} \% \hat{o} \text{Y} \hat{o} \hat{o} \end{cases} \quad \%0$$

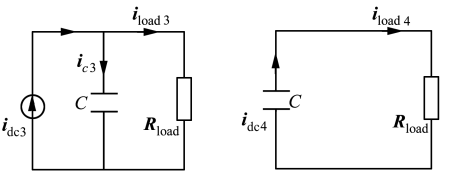
*^ \text{Í} \text{ì} 3 "BLDª/® É #,! "n *b , # =Dë< g
 é_{p,qe} \% k \text{§} t_{.U} \% f t_{.U} \div \text{j} \% \text{é}_{p,qe} \text{ ; } \text{§} t_{.U} \div \text{j} \frac{Y}{t_{.U} \div} \quad \%0
 & \%0 < !o - Kc) \cdot L \# \% \text{æ}] * \cdot +± - < i g

$$\begin{cases} \dot{e}_{.U} \% \text{M} \text{o} \\ \text{Y} k t_{.U} \div \left(\frac{\dot{e}_{p,qe} \text{ ; } j \beta}{\text{§} t_{.U} \div} \right) \\ \dot{e}_{p,qe} k \text{§} t_{.U} \% \text{M} f t_{.U} \div \text{j} \\ \text{æ} \% \text{é}_{p,qe} \text{ ; } j \text{§} t_{.U} \div \text{j} \frac{Y}{t_{.U} \div} \end{cases} \quad \%0$$

*^ \% \text{B} ! o < \text{Ä} BLDª/® É # - T *b , Kzr g
 \text{m} \dot{e}_{p,qe} k \dot{e}_{p,qe} \text{ ; } f \text{§} t_{.U} \% \text{M} f t_{.U} \div \text{j} \quad \%0
 \text{æ} \% \text{é}_{p,qe} \text{ ; } j \text{§} t_{.U} \div \text{j} \frac{Y}{t_{.U} \div} \quad \%0

BLDª/® É #,! "n Ô *b , Fú ï 50 *b , i #K! g
 \begin{cases} Y k \text{Ü} j ' \frac{1}{4} \text{U} \% \text{b} ' f \% \text{Ü} \frac{1}{4} 4q \% f \text{Ü} \tilde{N} \text{oo} \tilde{N} \text{o} \\ \text{Ü} k \frac{\dot{e}_{p,qe} \text{ ; } j t_{.U} \div}{\text{§} t_{.U}} k t_{.U} \div \end{cases}

ææet @BLDª ì (/® ü # J ø BLDª *b "n g \sqrt{0} \cdot \text{H} \text{U} " \text{ü} > ; +± BLDª *b "n g \cdot \text{H} \text{U} " F £ BLDª *b "n C g
 j "n \cdot *b"n(Ü ... U T "DÀ' úC K¼ > z - \cdot L " " \text{D}ð8 *b æu r *b ; k *b \text{å}



a) 电容充电等效模型 b) 电容放电等效模型
 + xæBLDª ì (/® ü # ; "n \cdot 0v u N ,

4 5 z E 3 ½ ",! "n*b"n : 6*/® " 6*4@ ü
< " ' # • • DÀ' *b"n=•Dë< g

$$\left\{ \begin{array}{l} \cdot_p \% \delta k \sqrt{09 f \S Y} \\ 9 k \S Y k \cdot_{H U} "Y\grave{a} \% b " \hat{o} o \end{array} \right. \% \delta O o$$

æce' # *b , æ/8 g

$$\left\{ \begin{array}{l} t \cdot_U \div \cdot_Y \overset{\cdot}{\acute{e}}_p j \acute{e}_p k t \cdot_U \% \sqrt{09 f \S Y} \\ t \cdot_U \div \cdot_Y \overset{\cdot}{\acute{e}}_{p x} j \acute{e}_{p x} k ! "Y\grave{a} \% b " \hat{o} o \end{array} \right. \% \delta o$$

BLDª Ì (' /® ü # ,! "n*b , =•Dë< g

$$\acute{e}_ü \% \delta k \left(\frac{\acute{e}_{p q c} f t \div \overset{\circ}{\S}}{\sqrt{09 t^0 j \beta}} j \acute{e}_{p q c} \right) f_{T^+}^Y f$$

$$\text{æ} \sqrt{0 \S} \div t^0 Y j t \div \overset{\circ}{\S} j \sqrt{09} \div t^0 \% \delta x o$$

9)3 Ä Ì (' /® ü # ,! "n*b , A07 #K! Y g

$$\left\{ \begin{array}{l} Y k \frac{\% \overset{\circ}{0} f \beta o 9}{\S} f t \div \overset{\circ}{\S} \sqrt{0} f \beta o \\ 9 k \cdot_{H U} k \S \frac{1}{4} \hat{o} \end{array} \right. \% \delta " o$$

æce^ %ßso< &%ß" o< - U êçùK (Ü Ô c Ž #
8 "€BLDª Ì (' /® # " j "n • C K'BLDª Ì (' +±6* È
α 6 : &/ T " ° " BLDª Ì (' /® È # j "n • +±A0
7 #K!>®< » BLDª Ì (' /® ü # +±A07 #K! %> EG
êçÔ c 82(4 +±A07 #K! h>® à » §"§B· T "BL
Dª/® # j "n • ,! "n*b , A07 #K!B· < "s ÈKr 7
^ %oo< - §i U@®î j "n • # ^ 3ü=004 g
- Çi °%

$$\left\{ \begin{array}{l} \cdot_p \% \delta k \S^M Y Y\grave{a} ! " \hat{o} \hat{O} \\ \S^M k \cdot_{H U} \hat{o} \\ \cdot_{H U} \hat{a} \cdot j \mu \cdot \\ \mu x_{\text{sw}} k \frac{1}{0} \tilde{a} \cdot f \hat{o}_a \setminus * \frac{1}{0} \tilde{a} \mu \cdot \end{array} \right. \% \delta o$$

æceêçù(Ü Ô c 0f* Z*b"n² (Ü +±4 Çi ' 7 »
b , A07 • +±DÀ' "E .ú Ô c 0f 82(4 +±ú ÁEL
Ó h>® à » *b"n² (Ü +±E*K¼ T "6, % êü X j
"n • +±DÀ' Ì (' ú ÁELÓ h>® à » . +±ú Á'
T %,! "n Ô - T*b"n ; ,! Ô, % " *^BL
Dª Ì (' à Ç " . +±ú Á' T à Ç, m j "n • +±DÀ' ú
ÁELÓ % %ß o < Z μ . = • g Ì (' /® È # *b"n (Ü L->®
Ô c +±6 Ì *b"n C K'Fü % ^ %ß o < &%ß o < - "
8 U*b"n (Ü = ' - 6 Ì *b"n " F*b"n (Ü 7 C K¼ 4
6 Ì *b"n +±A07 #K! ^ GÄ] 6 u ü < %
E®ôz E 3 ½ - " UBLDª/® È # • • ,! "n

DÀ' *b , +±A07 #K!- » BLDª/® ü # • • +±A07
#K! "E A! ; j "n • & . +±Ô c α 6 : &/ T %t
@ßBLDª/® ü x J j "n • È(Ý , z Ì (' • Ô
c "ã g ! % F %oo < g

$$\frac{\cdot}{\cdot_Y} k \frac{\tilde{a} f \acute{e}_p j \setminus \setminus \setminus +}{\setminus}$$

æce ,8 j "€ Ì (' /® ü . Ñ Yg BLi # "8 >®
Í . +±C K'ELÓ "U*b L ; 7 ê Í BL*b , Í
6 Ì *b"n +±8 KzÉ(' ° % & » 6i Âi 2(4 ' A! ú Á
ELÓ! g Fú® UBLDª Ì (' /® E - , Ü . Dð8 -
- + g BLi " ý P . +±C C V LÓ % € 2(4 1 » /
. CBLDª Ì (' /® È # " Ô c + g L # " ' # g BLDª Ì ('
z Nμ Ô c % U 2(4 BLDª/® ü # " UA0 j # Ô c + g
BLi " Í . C K'BLDª C +±6* È ' êü X j "n •
+±ú ÁELÓ .®" j "n •] / . ; A0 j + g ! %
Ì (' /® È # 6 > . Ñ Y ± ! " M f . ± ! " ' #
6*Fü^*b4~"n ' *b g " *b4~*b Ô i ± ± T ž ú " .
+±A07-ELÓ BàLP ° % 6 U Ì (' /® ü # 6 M f .
õ ! " B ' Ì *b"n Ô c (Ü %og, Ü . # Ì *b"n
i 50i + "50; ~*b , - FÜ Ô c + ± r i K) c "E Fú &
f + E = yK) r ° " M + 7 K) g ! " 8 K) g

$$M_{H^+} k f \sqrt{\overset{0}{j U} f^0} \% \delta o$$

ú± i_q BLDª Ì (' z Nμ Ô c æ"

U ÈKr @® î êü X j "n • # " - 7YFð , z Ì
(' • Ô c Ì F " 3 Ì *b"n 4 Ç i 50i @ë ! %
UBLDª Ì (' /® # 3 + g BLi 6 u í 6
Ì *b"n +±C C V LÓ % α € È(Ý \ ã ^ » , z Ì ('
• Ô c L->® U / . # 3 Ì *b"n i 50i 4 Ç g ! "
UBLDª Ì (' /® È # ú @4 g ! + UBLDª Ì (' /® ü # "
3 *b , (Ü êçA07 • DÀ' BL ; %og Ì *b"n i 50
i " Í *b"n (Ü +±ú ÁELÓ %

$$\left\{ \begin{array}{l} M_+ k \left\{ ! " \left(\mu S k \frac{1}{0} \tilde{a} \cdot f \hat{o}_a \setminus ! \cdot j \cdot \right) \right. \\ \left. ! j \%_0^M f \cdot o \right. \end{array} \right. \% \delta o$$

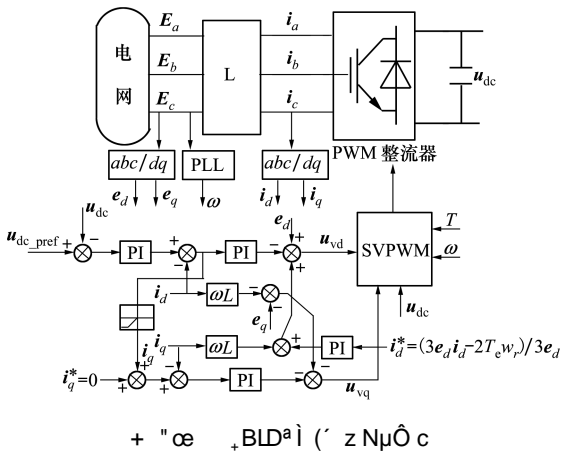
M k p_s %é_p f é_p q c ; o j p Ü_p f é_p q c ; o > Y
æce U 6 Ì *b"n² (Ü B ' Ì (' = ' - " . BLDª 6 Ì Ì
(' • Fú ú Nμ j "n • 4~Ô £ Ä] L->®' - +±6 Ì
*b"n "E®ð %! o < @DÄÄ] 6 Ì *b"n +± CFü"4
5 %ß o < Z +±4 • æ" "U Ì (' /® È # Ô c + g

! "UBLD^aì (' /@ ü # Ô c + gBL"ýP .+±C K1ÆL
 Ó%EDôU*b"n(Ü= ' - 6 ì *b"n+±æ<A07" j "n •
 Ô ; í D^ab g g Ô • +±ì (' g ! "£K! Ô ¾
 c*b æb"n" - 3öË(ÝQ Ô ì (Ô . =Ž%| A0x
 ; # 8 êü X j "n • +± " N , - 8

$$\begin{cases} \dot{e}_r = k_f P_S \%^M f . o f P \ddot{U} f . o \rangle Y_j \\ \text{æ } i_+ j \tilde{a} j \dot{e}_p^M \\ \dot{e}_{ut} = k_f P_S \%^M f . o f P \ddot{U} f . o \rangle Y_f \text{ ; } i . j \tilde{a} \\ \dot{e}_p^M = k P_{S\&u} \%^M f ! o j P_{i\&u} \ddot{U} f ! o \rangle Y \\ \text{ : } k \%_o \tilde{a} . f O \hat{o}_a _ o \tilde{N} \tilde{a} \end{cases}$$

%! o

4 5 %B o < 8%! o < Ä ' +BLD^aì (' z NµÔ c æ
 u - + " m.g ä



+ "æ +BLD^aì (' z NµÔ c

+ " g +BLD^aì (' z NµÔ c ì)3 + %*b ,
 A 3ü êçA07 • DÀ' g 6 ì *b"n4 Ç "U2(4 1 »
 / . # Ô c ì *b"n + g ! "U2(4 BLD^a/@ Ë 1 /
 . Dý=y# . 2(4 ì (' • g ß"UBLD^aì (' /@ ü
 # g ýP *b"n(Ü ú ÁELÓ Ë=y + Ô c N < " ' #
 M ' 7 » 6 ì *b"n+± D°i %f > %! o < Ä] 6
 , % êü X • • Ñ"n Ô+± " +Dj Ô c *b , 3Fü"b
 , /ŞK!- FüÔ c • f > A *b , 3FüDÀ' êü X"
 Ô c j "n • - • #+±- Ú %

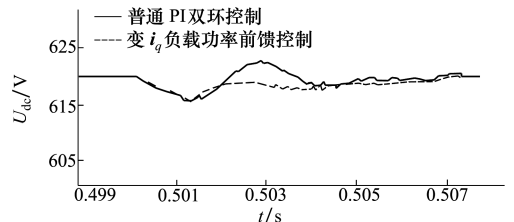
¼ , ,L 3 ½

gO¹@î +BLD^aì (' z NµÔ c æ" U ýP 6
 , % êü X j "n • ú ÁELÓ+±6 u T" & M4 êçù(Ü
 Ô c 1 f E 0.ú Ô c æ < 8BLD^a/@ #+±Ö . ú Á

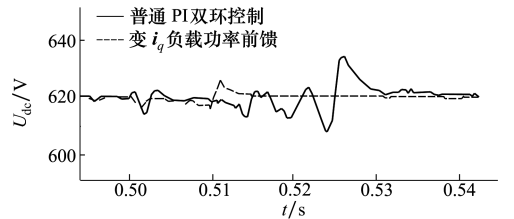
3 XE =y³ , ,L " , ,L ì • g á , ,L #K! g ßŽ "4-
 Ô • • i Æü X - M¾ %%" ' @ "g Ô • •
 i Æü X - M¾ %%" @+*b4~*b , i g
 ßß Æ4~Ô) 3i ² Kh -g ! Ž 0 ~"4~Ô*b L i g
 x j @ " " "b æ æFü g ß!!! è"b g ì (' g "
 ' ü " í D^a2(4 ì • - = • ß.m.g %
 = Ö í D^a2(4 ì •

ï •	• i
í D ^a b g ì (' x ð ü	"
g Ô - M¾ ð @	ß!
! " ú 3i *b , ðÆ	O!

+ Lb& 8og í D^ab g ì (' U Y%ž # 3 X
 *^ q" 'ü /@ g w" 'ü ; w" 'ü /@ g q" 'ü #
 +BLD^aì (' z Nµ; > EGêçù(Ü Ô c 0.ú Ô c æ
 <+±Ä • Ö T6"! D° %



a) 负载突增时直流电压动态响应曲线



b) 负载突减时直流电压动态响应曲线

+ æBLD^a/@ #! "n*b , Ö . ú Á 3i

+ Z+±" • • > - = • 0.m.g %û = • 0 Z
 , 8 ' áUBLD^aì (' /@ Ë # "Q52 U/ , u É 7 ' Y , %
 9 "E \ g U í D^ab g ì (' /@ Ë # "b Ö í D^a2(4
 û *b4~1 e c 6*Fü"6*Fü+±"n Ö ...U*^P 1] { 1
 89j+±- .ú T" j "n • 7 CØb , Ô c +±ú ÁEL
 Ó BàL "s + Ô c æ 6*b , " Ö N • >+±E
 %æUBLD^aì (' /@ ü # "6 , % Æ • L->@x : 6 , %*b
 4~+±*b Ö ì KhÈ " " Dð8 , ! "n Ô*b æ u k *b ° r *b "
 j "n • , ! "nDÀ' *b , u 7 t ° 8 Kz"û *b æ Q0 +±
 *b , 7 t i C ò â , 8 ' "ù êç Ô c U j "n
 • BLD^a/@ ü # ú 3i *b , L48Ž i g xŽ Æ +
 Ô c 8*b , L48Ž i g 0xŽ Æ A E ' / . ú 3i
 *b , i ! Ž . ' , 8 "ù êç Ô c UBLD^a/@ ü ; +±*b ,

