

JYSçãÑÑs ys-VÑÓ yÓ ÓÑ¥ SéÑ# # úy# #

- .ú L• > G ç g | 9 4CKL Ô c ±± f E # Ó.ç 3ü4~4 æ"

AO' v ^{řw0} wa ä ^{řw} wK;7à ^{řw0} w A-1 x wM¥ • ^{řw0}

æřž>7VWŦ • E/7WÍ Ç - \ Fú%æŦO'Ñ " V"Rœ !! !!+0žž * !>7WT " E/7W' K•" V"Rœ !! !!+
è žž * !>7WT " *b } œ; 7 ŐC " K•" V"Rœ !! !!+xžž-D GT " @ĐÄg " K•" K,>->-¶ œŦŦ!ŦŦ

...œ@ÁA/£ ³ G4! ÓN=y• > 8±±| 94CKLÔ c K MÄý ' ³ - .ú ' » f E # Ó.ç 3ü4~4 ±±| 9N
=y Ôc æ' NÄu w*U# Ó.ç 3ü4~4 U3i j Ç êçŦÔc • w@Ŧ³ - .ú ' »# Ó.ç 3ü4~4 ±± êçŦÔ
c • £ N wµ & M4 # Ó.ç 3ü4~4 c ^ ELÓ• " • u({ ±K MÄŦ # g ³ \$ BàG ç g 4CKLN=y
±±Ë # T wU# Ó.ç 3ü4~4 Ôc • Z B' ŐFü } ýP 4~4 ±± " • T6* - ; w8 m@Ŧ±f E #
Ó.ç 3ü4~4 Ôc • - , j G ç g | 9N=y(Î g œË(Ý | 94CKLN=y & G ç g | 94CKLN=y
E=y, ,LO¹@îw ,L4 É=• ; w@Ŧ±f E # Ó.ç 3ü4~4 4CKLÔc • 6 u Ë(Ý G ç g ±4CKL
*L = ; | 9N=y

œj| œ@ÚÄ 94CKL f E # Ó.ç 3ü4~4 êçŦÔc • ŐFü }
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Ë(Ý ³ G ç g U- Ç #K! ² 6&" - Ç±±4CKL>ñF
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> ÷ ç ç wkdUç ç êçŦÔc 6 @ » Ë(Ý ÷ Ôc u É7œ
ª 0v! T " =Ø- " Á*U » GDð8 Ôc x⁰% êçŦÔc
c • ±±T6* K} » ! , & 3 & Ŧ 3 .ú i • %
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g œ; @ã3üO' ¹% C "3ü¥±± êçŦÔc • "
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G ç g 4CKLN=yDð8 Z±±| 90f* ; 0Í Ô æ
" - ,! \ * ² C " 52±±A/£ & %æ^{řw0}%' ([ÒA
/£ ³ GN=y• 4CKLN=y Ôc Z±±| 90f* K MÄ' %
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u" » | 9 , . A07 "4 ' ³ - .ú GN=y• | 9 ,
. A0ÔN , +£ N "4 5#p6ÉÔc • @ŦŦ³ , . | 9
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c , ±f Ç T %' ([Ŧ! Òy ' ³ - .ú ' » œ-
7! T±±| 9 Ôc 0f* " Ë(Ý ³ û GN=y• ±±4CKL'
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x(ÛE*CWf* "4 ' ³ - .ú š 7 *^ Ó G ç g | 9
Ôc æu "£ AEŦðËŦO¹@î³ m@ŦŦŦ| 94CKLæ
" ±±6 u T %K' ' x C "6±± " 52ý ' ~*U { Ç >
A' XK (Û 6>y@ŦŦŦÎG ç g 4CKLN=y Ôc • ^{řw0}%
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M4 +±L <3i T Ô c æ" L->®=&=ÛÛ c &AZ' /ø : o
 +±• " N, +£ N"U : -> Ç(Û° 8 "M4 æ" µKë
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Y ' UG ç g 4CKLÔ c K MÅZ - *U ³ # Ó.<
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 3ü4-4 " @æÍ³ - .ú 4CKLÔ c • "A Ô c • - *U # Ó
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A ' 3ñ3ð4 ± - 8 ðY- 7'4 ' , % 5üæ @æt
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 ' ³ ' » f E # Ó.< 3ü4-4 +±G ç g | 94CKLÔ
 c • "£ E = y ³ / Ç T 3 ½ ðYÁ7' ", , L È O¹O¹ @æ
 ³ mý ' æ" ±±6 u T %0Yš7' h4 • ' £ 4 ' W
 ' %o, H %

Óç f E # Ó.< 3ü4-4 N,

Ó.< 3ü4-4 +± " • T6* K} » @æBð d Y • FÜ
 ; 4-4 K½X o +±o • %È # ±±G ç g | 94CKLÔ
 c >®o.< 3ü4-4 " • N, ¤ 6D'P +± " • T6* %
 ' "Y ' U ú > MÚDð8 ßB Z B ' ³ ÖFü e • Í
 " • ELÓ ÷ @æBðDð8 ±± % & / Ç %
 1" i » 3ü¥ +± < 3ü4-4 "# Ó.< 3ü4-4 +±DÀ'
 o : 2 X\$í "h * • %K' ³ DÀ' o C " @æÇ ý - o Z
 .< 3ü, p n +±DÀ' g I_n "DÀ' \$ g y_n % @æÇ, %Eè
 { - o Z.< 3ü, p m +±DÀ' \$ g y_m "FA .< 3ü,
 p +±DÀ' i - %ßo < m.g %

$$\begin{aligned} y_n &= f \theta_n + I_n o \\ I_n &= \sum_m \omega_{nm} f \theta_n + I_n o \\ f \theta_n &= \frac{E - F \theta_n - Fx}{\beta + Fx} o \end{aligned} \quad \%ßo$$

< Z ãE = ß x + F = !. "0+< 3ü p n +±K5i = • g g
 θ_n +< 3ü4-4 DÀ' o +±7 - K½X o Z +± y W.< 3ü p
 n +±DÀ' g y_n % @æÇ DÀ' o Z.< 3ü p k +±DÀ' \$
 g y_k "£ & Á +±DÀ' \$ g I_k " F y_k ¹ I_k - %ßo <
 m.g

$$\begin{aligned} y_k &= f(\theta_k + \sum_n \omega_{kn} y_n) \\ I_k &= \sum_n \omega_{kn} y_n \end{aligned} \quad \%ßo$$

ææ & » 0Yt + ßN4-4 p Fú +±! Ý ".< 3ü, p u +±
 DÀ' \$ g x_p^{t+ß} "DÀ' \$ g y_{pu}^{t+ß} " L HDÀ' \$ g
 O_{pu}^{t+ß} "FA \$ +±æ - %o o < m.g

$$E_p^{t+ß} = \frac{\beta}{0} \sum_u \omega_{pu}^{t+ß} - O_{pu}^{t+ß} o^0 \quad \%o o$$

& » N WDÀ' d Y " %æo <= • g # Ó.< 3ü4-4 +±
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$$E_p^{t+ß} = \frac{\sum_u \omega_{pu}^{t+ß} - O_{pu}^{t+ß} o^0}{0N} \quad \%æo$$

æ E_p^{t+ß} U ú > MÚDð8 Z : Ú ú > " £ AE Ò p
 i ω_{ij}^{t+ß} l i , mæ E_p^{t+ß} +±Ü Ó : Ú C % @æÇ .< 3ü,
 p +±DÀ' \$ g x_p^{t+ß} & » E Ò p i ω_{ij}^{t+ß} +± • FÜ
 Δ_p ω_{ij}^{t+ß} ' • FÜ • ! » - \frac{N_p^{t+ß}}{N_{ij}^{t+ß}} " p i +± • FÜ
 Δ_p ω_{ij}^{t+ß} - %o o < m.g

$$\begin{aligned} \frac{N_p^{t+ß}}{N_{ij}^{t+ß}} &= \frac{\sum_u N_p^{t+ß} \cdot \frac{1}{4} C}{\sum_u N_{ij}^{t+ß} \cdot \frac{1}{4} C} \\ \frac{N_u^{t+ß}}{N_{ij}^{t+ß}} &= \frac{y_{pj}^{t+ß}}{N_{ij}^{t+ß}} = \frac{N \left(\sum_j \omega_{ij}^{t+ß} y_{pj}^{t+ß} \right)}{N_{ij}^{t+ß}} \\ \Delta_p \omega_{ij}^{t+ß} &= \frac{\beta \cdot \sum_u \Delta_p \omega_{ij}^t}{\lambda \cdot \sum_u \Delta_p \omega_{ij}^t} - \frac{N_p^{t+ß} \cdot \frac{1}{4} C}{N_{ij}^{t+ß} \cdot \frac{1}{4} C} \end{aligned} \quad \%o o$$

< Z " λ g " • (' " ! j β < ß g ÖFü e • " ÖFü }
 i g !. "%

$$\text{@æÇ } \delta_{pu}^{t+ß} = - \frac{N_p^{t+ß}}{N_u^{t+ß}} " f > \%o o < \text{Ä}$$

$$f \frac{\partial \omega_u^{t+\beta} + I_u^{t+\beta}}{\partial t} = \beta \omega_{pu}^t - \gamma_{pu}^t \omega_{pu}^t =$$

$$\frac{\partial}{\partial t} \left(\frac{N_u}{\epsilon} \frac{\partial \omega_{pu}^t}{\partial t} \right) = \frac{\partial}{\partial t} \left(\frac{N_u}{\epsilon} \frac{\partial}{\partial t} \left(\frac{\partial \omega_{pu}^t}{\partial t} \right) \right)$$

$$\delta_{pu}^{t+\beta} = - \frac{\partial \omega_{pu}^{t+\beta}}{\partial t} = - \frac{\partial}{\partial t} \left(\frac{\partial \omega_{pu}^t}{\partial t} \right)$$

$$\frac{\partial}{\partial t} \left(\frac{\partial \omega_{pu}^{t+\beta}}{\partial t} + I_u^{t+\beta} \right) = \frac{\partial}{\partial t} \left(\frac{\partial \omega_{pu}^t}{\partial t} - \gamma_{pu}^t \omega_{pu}^t \right)$$

$\epsilon Z "O_i^{\beta_0} = x \omega_i^{\beta_0} = \beta "O" g \# \acute{O}. < 3ü4-4 ++$
 DÀ' %U0Y_u N. < 3ü4-4 " • Dô8 Z "0Y- o K1/2X
 o Z. < 3ü p j + ± DÀ' - %ββo < m.g %

$$I_j^{\beta_0} \omega_{ij}^{\beta_0} = \left(\frac{\partial \omega_{ij}^{\beta_0}}{\partial t} O_i^{\beta_0} \right) "j = \beta "O" - "a_{\beta}^m \omega_{\beta\beta o}$$

$$A. < 3ü p + ± DÀ' - %ββo < m.g$$

$$O_j^{\beta_0} \omega_{ij}^{\beta_0} = f \frac{\partial \omega_{ij}^{\beta_0}}{\partial t} \omega_{ij}^{\beta_0} =$$

$$\Delta_p \omega_{ij}^{t+\beta} = \beta \frac{\partial \omega_{ij}^t}{\partial t} - \frac{\beta}{\beta} \delta_{pu}^{t+\beta} \gamma_{pj}^{t+\beta} \frac{\partial \omega_{ij}^t}{\partial t}$$

$$\delta_{pu}^{t+\beta} = \beta \omega_{pu}^{t+\beta} - \gamma_{pu}^{t+\beta} \omega_{pu}^{t+\beta} - \gamma_{pu}^{t+\beta} \omega_{pu}^{t+\beta}$$

$\frac{\partial}{\partial t} \left(\frac{\partial \omega_{ij}^{\beta_0}}{\partial t} O_i^{\beta_0} \right) "j = \beta "O" - "a_{\beta}^m \omega_{\beta\beta o}$
 < Z "DÀ' o. < 3ü p 7 %æ] K1/2X o. < 3ü p 7 %æ ± ±
 E Ò p i g ω_{ij}^{β₀} %\$í "h * • f %_{oo} g ù 3i • 4 *
 • % < 3ü4-4 ± ± DÀ' o 0Y- o K1/2X o 0Y¹ o K1/2X
 o "0Yk o K1/2X o 3 X - * U %ββo " %ββo " %ββo ; %β + k -
 ββo = • .g "DÀ' o - * U %β + n o = • .g %K1/2X o Z0Yk o
 Z ý W. < 3ü p 7 %æ ± ± DÀ' - %ββ o < m.g %

ææDÀ' o, %EæK1/2X o Z ± ± < 3ü p j ; < 3ü p i E
 Ò p i ω_{ji} ± ± • i - %ββ o < m.g % £ Z ". < 3ü p i
 1 » , %Eè ± ± ! { - o ± ± K1/2X o %

$$\delta_{pj} = \frac{\partial \omega_{pj}^t}{\partial t} = \frac{\partial}{\partial t} \left(\frac{\partial \omega_{pj}^t}{\partial t} \right) = f \frac{\partial \omega_{pj}^t}{\partial t} = \frac{\partial \omega_{pj}^t}{\partial t}$$

$$\frac{\partial}{\partial t} \left(\frac{\partial \omega_{pj}^t}{\partial t} \right) = \beta \omega_{pj}^t - \gamma_{pj}^t \omega_{pj}^t$$

$$O_j^{\beta_0+k-\beta_0} \omega_{ij}^{\beta_0+k-\beta_0} = f \frac{\partial \omega_{ij}^{\beta_0+k-\beta_0}}{\partial t} \omega_{ij}^{\beta_0+k-\beta_0} =$$

$$f \left(\frac{\partial \omega_{ij}^{\beta_0+k-\beta_0}}{\partial t} O_i^{\beta_0+k-\beta_0} \right) "j = \beta "O" - "a_k^m \omega_{\beta\beta o}$$

$$\Delta_p \omega_{ji} = - \lambda \frac{\partial \omega_{ji}^t}{\partial t} = - \lambda \gamma_{ji}^t \frac{\partial \omega_{ji}^t}{\partial t} = \lambda \gamma_{ji}^t \delta_{ji}^t$$

\$í "h * • f %_{oo} - %ββx o < m.g

$$f \frac{\partial \omega_{ij}^{\beta_0+k-\beta_0}}{\partial t} = \frac{\partial \omega_{ij}^{\beta_0+k-\beta_0}}{\partial t} \frac{\partial \omega_{ij}^{\beta_0+k-\beta_0}}{\partial t} =$$

< Z

$$- \frac{N_p}{N_{pj}} = - \left(\frac{\partial \omega_{pj}^t}{\partial t} \right) = \frac{\partial \omega_{pj}^t}{\partial t}$$

< Z "E = β x "F = !. "0% %ββ o < = • .g - ; - o
 K1/2X o ± ± DÀ'

$$\frac{\partial}{\partial t} \left(\frac{\partial \omega_{pj}^t}{\partial t} \right) = \frac{\partial}{\partial t} \left(\frac{\partial \omega_{pj}^t}{\partial t} \right) = \frac{\partial \omega_{pj}^t}{\partial t}$$

$$I_p^{\beta_0+n} \omega_{ij}^{\beta_0+n} = \left(\frac{\partial \omega_{ij}^{\beta_0+n}}{\partial t} O_i^{\beta_0+n} \right) \omega_{ij}^{\beta_0+n}$$

$$p = \beta "O" \neq \beta "O" - "a_n^m \omega_{\beta\beta o}$$

f > 7 = • Dè < "Ä] %ββ o <

$$\delta_{pj} = \omega_{pj}^0 - \gamma_{pj}^0 \omega_{pu}^0 \left(\frac{\partial \omega_{pu}^0}{\partial t} \right) \omega_{\beta\beta o}$$

- ; "K1/2X o p i ± ± ! ÝFüg äΔ_p ω_{ji} = λ γ_{ji} δ_{ji} %

DÀ' o ± ± DÀ' - %ββ o < m.g

$$O_p^{\beta_0+n} \omega_{ij}^{\beta_0+n} = f \frac{\partial \omega_{ij}^{\beta_0+n}}{\partial t} \omega_{ij}^{\beta_0+n} =$$

$$\frac{\partial}{\partial t} \left(\frac{\partial \omega_{ij}^{\beta_0+n}}{\partial t} O_i^{\beta_0+n} \right) \omega_{ij}^{\beta_0+n}$$

† ' » f E # Ó. < 3ü4-4 ± ± x Q_u N
 = y Ô c •

p = β "O" + j = β "O" - "a_n^m ω_{ββ o}
 %ββ o < = • .g # Ó. < 3ü4-4 ± ± - 3ôDÀ'

4-4 DÀ' o ; DÀ' o ± ± < 3ü , p W • , %9 " t
 g % @ ç # Ó. < 3ü4-4 X 6 n o K1/2X o "K1/2X o k
 ± ± < 3ü p W • g a_k^m %DÀ' o ± ± < 3ü 7 %æ K1/2X o ± ±
 . < 3ü 7 %æ DÀ' o ± ± < 3ü 7 %æ X - * U i " j ; p = •
 .g % # Ó. < 3ü4-4 DÀ' o ± ± V DÀ' \$ 3 X g Ô
 c 2 (4 U ý - h ± ± DÀ' \$ "DÀ' \$ ÷ DÀ' ;
 DÀ' ± ± i %A # Ó. < 3ü4-4 ± ± DÀ' \$ \ ê ç Ô Ô
 c • ± ± Ô c i • K^p "Kⁱ "K^d %

$$\frac{\partial k^p}{\partial t} = O_{\beta}^{\beta_0+n}$$

$$\frac{\partial k^i}{\partial t} = O_0^{\beta_0+n}$$

$$\frac{\partial k^d}{\partial t} = O^{\beta_0+n}$$

ææg³ í @ ß ß E L Ó £ A . , % & / Ç ± ± @ ß ß D ô
 /8 " U ú > M Ú D ô 8 Z B ' Ô F ü } % ú > M Ú D ô
 /8 - * U 3 Ü Ó 8 K Z " "DÀ' o ± ± p F ú ! Ý - %ββ o <
 m.g %
 æ μ ω_{ij}^{β₀+n} ω_{ij}^{β₀+n} = α δ ω_{ij} ω_{ij} + β ω_{ij}^{β₀+n} ω_{ij} - β ω_{ij}
 æ æ ω_{ij}^{β₀+n} ω_{ij}^{β₀+n} = γ ω_{ij} ω_{ij} + β ω_{ij}^{β₀+n} ω_{ij} - β ω_{ij}

$$\alpha\beta\omega_{jp}^{\%0+n\%} - \beta\sigma + \alpha\gamma^{\%0+n\%} \frac{\alpha N^{\%0+n\%} \ddot{o}}{e N^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

$$\frac{\alpha N^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4} \frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4} \frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_{jp}^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

< Z " e %0+n% = r %0+n% - y %0+n% - *U μ %0+n% " y %0+n% ± % &

CFü=•.g N/ N ±±] @Ïi " " %0+n% < m.g

$$\frac{N}{N} = \frac{y^{\%0+n\%} \ddot{o} - \beta\sigma}{\frac{\alpha N^{\%0+n\%} \ddot{o}}{e N^{\%0+n\%} \ddot{o}} - \mu^{\%0+n\%} - \beta\sigma}$$

êÛ Õ c • ±±DÀ' " %0+n% ! o < m.g %

αμ %0+n% = μ %0+n% - βσ + O_β %0+n% %0+n% - e %0+n% - βσ +

ææO₀ %0+n% e %0+n% +

ææO₀ %0+n% %0+n% - e %0+n% - βσ + e %0+n% - O₀₀ %0+n%

%0+n% < = •.g p Fú! ÝDð8

$$\mu\omega_{jp}^{\%0+n\%} = \beta\omega_{jp}^{\%0+n\%} - \beta\sigma + \alpha\delta^{\%0+n\%} \omega_{jp}^{\%0+n\%}$$

$$\alpha\beta\omega_{jp}^{\%0+n\%} - \beta\sigma + \alpha\gamma^{\%0+n\%} \frac{\alpha N^{\%0+n\%} \ddot{o}}{e N^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

$$\frac{\alpha N^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4} \frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4} \frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_{jp}^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

$$\alpha\beta\omega_{jp}^{\%0+n\%} - \beta\sigma + \alpha\gamma^{\%0+n\%} \frac{\alpha N^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

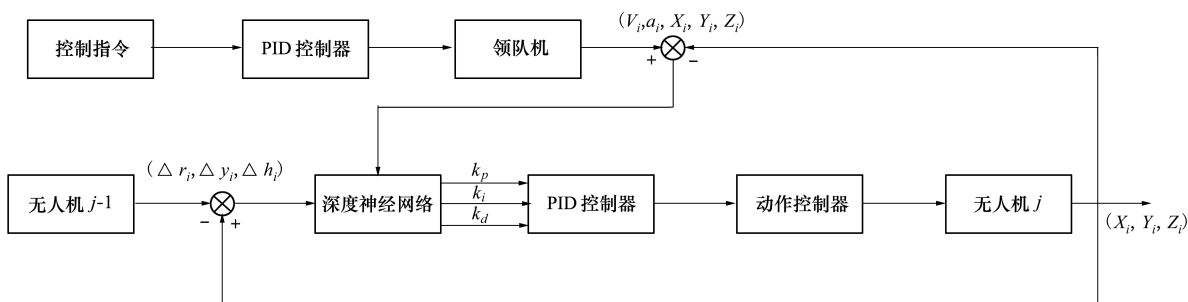
$$\frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_p^{\%0+n\%} \ddot{o}} \div \frac{1}{4} \frac{\alpha N_p^{\%0+n\%} \ddot{o}}{e N_{jp}^{\%0+n\%} \ddot{o}} \div \frac{1}{4}$$

$$\frac{\alpha \mu^{\%0+n\%} - y^{\%0+n\%} - \beta\sigma}{e \mu^{\%0+n\%} - \mu^{\%0+n\%} - \beta\sigma} \div \frac{1}{4} y^{\%0+n\%} \omega_{jp}^{\%0+n\%} - y^{\%0+n\%} \omega_{00}^{\%0+n\%} \beta\sigma$$

ú† ' » f E # Ó. < 3ü4~4 ±±G ç g | 94CKLÛ c

úÛ G ç g | 94CKLÛ c •

@Û4CKL ç g ±± • Fü g " " £ Z ß ā ç g
 g M³Wg " £ † x ā ç g g C K¹/₄ %G ç g |
 94CKLN = y - Ä G ā ç g EL . - 7! T ±±
 'ā . " " ā ç g . , % & / Ç ±±N = yC . è % £
 Z " x ā C K¹/₄ ç g . 4 - ±±P Ó " £ A 3 X 1 »
 • æ • ±± x WM²%³M³W ç g - *U êÛ Õ c •
 - + ß m.g " @Û j %ß " 0 " " x 3 X = •.g x ā C K¹/₄
 ç g ±±4C\$ % £ Z " & » x ā C K¹/₄ ç g " ü ā ç



+ ßæ' » f E # Ó. < 3ü4~4 ±±G ç g 4CKLÛ c •

g L-50;~ z - ā ç g ±±N = y'ā . £ %' A07 %
 & » C K¹/₄ ç g " : òL->50;~M³Wg ±±N = y'ā . "
 9 # L->@; , % £ è ç g . - Ç N = yC . è " £ AN
 = yP Ó . - 7! % Y ' - *U f E # Ó. < 3ü4~4 Õ c
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f E # Ó. < 3ü4~4 ±±DÀ' g äM³Wg ±±EL Õ
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 . Fü 6* CD° T " E & 4CKLN = y Õ c ±±T6* > @
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& » m - *U ±± < 3ü4~4 " 4-4 ±±DÀ' o " K¹/₄ o
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 W. < 3üp " @Û 0YL o ±±0Yj W. < 3üp] 0YL + ß o
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 %0o < ; %0 o < 3 X 4 ' ³ 0YL + ß o] 0YL o ±±
 E Ò p i ωj^{±±} ß o ÷ 0YL + ß o Z 0Yi W. < 3üp ±±K5
 i θi^{±±} ß o ±±! Ý æ < %

$$\omega_{ij}^{\% \text{ot} \beta \text{o}} + \beta \text{o} = \lambda \left(\bigoplus_{k=\beta}^{nL+0} O_k^{L+\beta} \omega_k^{L+\beta} \text{o} + \omega_{ij}^{\% \text{ot} \beta \text{o}} \text{o} \right)$$

%00o

$$\theta_i^{\% \text{ot} \beta \text{o}} + \beta \text{o} = \gamma \left(\bigoplus_{k=\beta}^{nL+0} O_k^{L+\beta} \theta_k^{L+\beta} \text{o} + \theta_i^{\% \text{ot} \beta \text{o}} \text{o} \right)$$

%0 o

< Z "λ "γ 3 X \ e • & J- } %

B' ÖFüeFüx ; ± p i ! Ý - %0xo < m.g %

$$\ddagger E = \frac{\beta \alpha_n}{O_{i=\beta}} \left(\bigoplus_{i=\beta} \omega_i^{\% \text{ot} \beta \text{o}} - y_i \text{o}^0 \right)$$

$$\ddagger \mu \omega_{ij}^{\% \text{ot} \beta \text{o}} + \beta \text{o} =$$

%0xo

$$\ddagger \alpha \beta \mu \omega_{ij}^{\% \text{ot} \beta \text{o}} - \alpha \frac{\beta}{\epsilon} \frac{\mu}{\omega_{ij}^{\% \text{ot} \beta \text{o}}} \frac{\ddot{\text{o}}}{\beta}$$

%0 o

< Z "E •.g L H "y' "y 3 X =.g L HDÀ' ; ËKr±
 DÀ' %α β 3 X =.g " • (' ; ÖFüe • "80! t U
 %b" β 2 %ω_k^{L+β} %ω_o ± E æ < - %0" o < m.g %

$$\delta_k^{\% \text{ot} \beta \text{o}} + \beta \text{o} =$$

$$\ddagger y_k - O_k^{\% \text{ot} \beta \text{o}} \alpha \epsilon \epsilon \epsilon \epsilon L + \beta = m$$

$$\ddagger f^{\% \text{ot} \beta \text{o}} O_i^{\% \text{ot} \beta \text{o}} \left(\bigoplus_{\rho=\beta}^{nL+0} \omega_{ip}^{\% \text{ot} \text{oo}} \omega_k^{\% \text{ot} \text{oo}} \text{o} \right) =$$

%0" o

$$\ddagger \alpha \epsilon \epsilon \epsilon \epsilon \epsilon \epsilon \epsilon \epsilon \epsilon \beta < L + \beta < m$$

f %0o g \$í "h * • " - %0 o < m.g %

$$f^{\% \text{ot} \text{oo}} = \frac{C}{\beta + 4q\%_{\text{oo}} Fx \text{o}} - C$$

%0 o

< Z "C "F g 0 WeFüi • " • i 3 X g β @ " !. @%

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 P Ó! . Ô c • ; !a 4! . Ô c • % £ Z "P Ó!
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 c • 50; ~ G ç g N = y !a L • ± x æ > ; y æ > ±
 , % & C . è % P Ó! . Ô c • ; !a 4! . Ô c • - 8
 m.g %

β o P Ó! . Ô c •

G ã C K¼ ç g , % & / Ç ± N = y P Ó E @ P Ó
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$$\ddagger \delta_z = k_p^\alpha \omega_c - \alpha \text{o} + k_i^\alpha \ddot{\omega}_c - \alpha \text{o} \gamma - k_{\omega_z} \omega_z \text{o}$$

$$\ddagger \alpha_c = k_p^h \mu_h \text{o} + k_i \ddot{\mu}_i \text{o} \gamma$$

%000

$$\ddagger \mu_h \text{o} = h_c - h \text{o} - k_{v_z} \frac{\alpha h \text{o} \ddot{\text{o}}}{\epsilon \gamma \varnothing}$$

< Z "M³W ç g ± N = y P Ó g h_c " C K¼ ç g L-
 > @ . ± P Ó " ω_z = • . g > ÿ E L Ó ω_z = • . g ç g
 UP Ó æ > ± 3i EL Ó % d_c^α "k_i^α "k_ω_z "k_p^h "k_i^h "k_v_z t g e
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!a . Ô c • 2 X 0 WF 3 % NÄu \ U!a
 L • 7 ; M³Wg . , % & / Ç ± C . è % α æ > 7 ± C
 . è 4! . Ô c • - %0 o < m.g %

$$\ddagger \delta_x = k_p^{v_x} \omega_x - v_x^c \text{o} + k_i^{v_x} \ddot{\omega}_x - v_x^c \text{o} \gamma + k_d^{v_x} \frac{\alpha x \ddot{\text{o}}}{\epsilon \gamma \varnothing} + u_x$$

$$\ddagger u_x = k_p^x \mu_x \text{o} + k_i^x \ddot{\mu}_i \text{o} \gamma + k_d^x \frac{\alpha \mu_x \text{o} \ddot{\text{o}}}{\epsilon \gamma \varnothing}$$

< Z â v_x g C K¼ ç g ∈ z EL Ó +^c g L HN = y EL
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 k_d^x "k_p^x "k_i^x "k_d^x 3 X g e FÜ % g !a L • 2 x æ > ± Ô
 c^a %

; x æ > Ô c • 1 " i " %0 o < , . g 3 ç g U
 y æ > 7 ± C . è 4! . Ô c • %

$$\ddagger \delta_y = k_p^{v_y} \omega_y - v_y^c \text{o} + k_i^{v_y} \ddot{\omega}_y - v_y^c \text{o} \gamma + k_d^{v_y} \frac{\alpha y \ddot{\text{o}}}{\epsilon \gamma \varnothing} + u_y$$

$$\ddagger u_y = k_p^y \mu_y \text{o} + k_i^y \ddot{\mu}_i \text{o} \gamma + k_d^y \frac{\alpha \mu_y \text{o} \ddot{\text{o}}}{\epsilon \gamma \varnothing}$$

%0 o

< Z ã C K¼ ç g ± Ë # EL Ó g v_y - € K¼ ç g ± L
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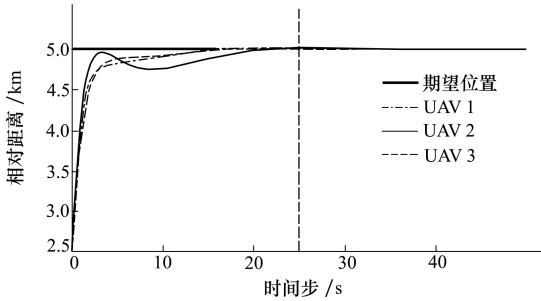
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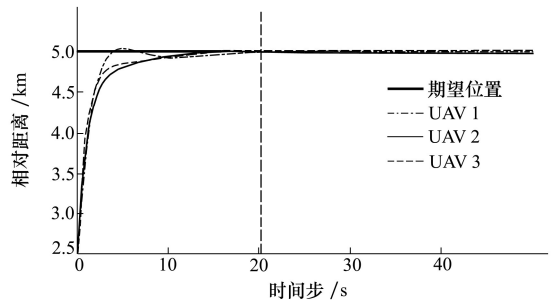


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