

JYScãÑÑ s ys-VÑÓ yÓ ÓÑ# SéÑ# Ó ú ½ äy#

WP ELDýÕ, 4 ¬ v ,% & | 4! , c) ,

(, 8• G^{ßw0} w=-, ^{ßw0}

%žž-D GT " 7W " K•" K,>->-¶ œ@!@+ 0žž,>-. /š VN =y• @@Í- \ Fú%æÖ'Ñ" K,>->-¶ œ@!@

...œ@Áµ &3ü#! ,) B" U X c) Kcâ WP ELDýÕ, 4 # , 8ä D°< " 6 u V*U) f g Ö
6* È ÷Kë È(Ý-Ý È>ÿ3ÓœvK MÅ' ' ³ - .ú ¬ v ,% & | 4! , c) , g - T3ü#! ,) B ,
+±, 8ä ÷ ý t £ &) f +±g ÖV*U6* È w@Í³ - W#) B2(• w- mý c) æu 4) 5! , ÷
ú! , 0.ú) B , +±E ì g È(Ý & P ELDýÕ, 4 +±ç > € (wB ' ³ ,% & | 4! , w@Í³ ò c ,% &
N =yD•E&ÿ È(Ý & -Ý È>ÿ+±3Óœ g ý t c) æu U WP ELg Ö, 4 # +±T6* wU c) 4 Z
& , 4 g Öž ú E =y³ = ' ¬ • i , ,L4 ÉO¹@Í³ A c) æu,% » 3ü#±± ,) B" # 6 ! T+±
, 8ä ¹ DÐª V*UÓw ÷ D°g +±Ý È>ÿ3Óœ* È

œ@ÍÁX c) P ELDýÕ, 4 -Ý È>ÿ3Óœ ,% & | 4! ,

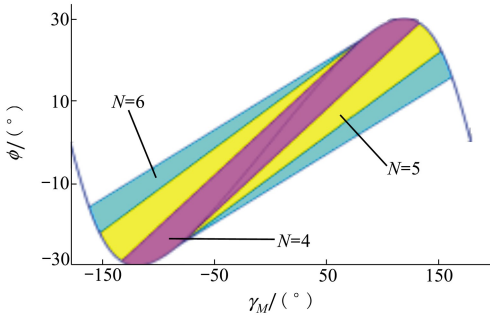
Z + 31" \$ ÁÆx Žœœœ' ([4 -. Äöœœœ' 0 4C\$ Áš!!!K@ %@! B o! xK OK

œœžü#! ,) B" ^ »>@o +±DÀ' œ> "/ ç MÅ ÄD°KëÈ(Ý % & » A K MÅ' ' ([BÖÛ ' ³ -
T a " Ä Ý • 6* È g " È & c \ K /š ú) " • X c) +± .ú # 6
h "nE6 ^ß%&c59"K¼ma Dpš K! P B² EL#p5 "
• +±p , "4 K /š ú) 2(4 S ' ³ ® T+±, È "£ h
>@K MÅU » nÅu " ! ,) B" \ , 4 ELÓ < »
Wf ELÓg t @è -m+±"59A t @žž # U Wa Dp
/šK! " • # µKë @í+£ N "X c) J ø \ Ö Ž #
Ä @g8 h "¬ Ä Z X c) Ñ) @g Kë+- ; "
Wf U X c) Z ; LL- *UDÐª @ T "æ @EM= £
3ë0 # h6^L£FüDôT " -Fô*U! Ò È œKë "µK' %
, z " & » WP EL, 4 "h>@6 0.ú WN <
E6 aMš•%ú! , o ^{ßK01}E3D•%o , oN < %&c59"
' » e2(• +± ,) B æu " @Fô*UE3D•E \ Mš
D•N < "C 3 £ 3ñ5 "ò"t Kë 6 u ? à £ , 8ä
D°< " : 6* 6 u V*U) f g Ö6* È0vK MÅ%
ª Z , 4 \ c) , @@Í+±0Y- >@Í % ' C "g
È g) f +±mQ. È " - - E >@o Wf U X c)
Kcâ È(Ý-Ý È>ÿ3Óœ ^{K0}% , z " ' » ! ,) B
" "4 TF 3 2 X-Ý È>ÿ3Óœc) , +±A/£ h>@µ
&L†• , 4 ÷ { ELDýÕ, 4 ^{K0}% & » WP EL,
4 +±K MÅ' ^ » ELÓ! D° T " @TK} c ³ >ó3ì >ÿ+±
C80! "7! ¬lµ & P ELDýÕ, 4 +±Ý È>ÿ3ÓœK

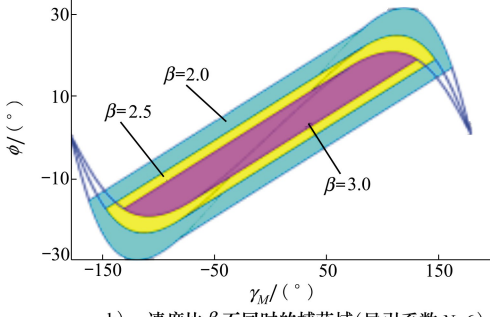
Ó† K MÄü E

V*U3üÿ±±,) B" WP ELDýÕ, 4 EGe
 L->FôUDûa W±N < %E3D•o"£ ' Y ì)3 \)
 f ÒDp 4 # ; , 4 ELÓ- Fù,%&±±æ> • L•Dû
 (, 4 " ì ») B a W8ä¹ / ÇC CW 4 " -) f
 6* L D° { ±ELÓ W] P ELDýÕ, 4 %&c59" &
 »3üÿ! ,) B" "E ...U 8 æL•K MÄc 3Qm
 £E - ' Á*U%

Bo X c) , 8ä D° < "7! ñ Z X c) Ñ)
 Kë%UY´ Z "t Ç, 4 û > !a N ' " , 8ä
 Ç v g\$ Bà) f 6* L = ì W] , 4 ±±J ø f E€k
 >ÿKó5 % + ßg) B2(• N ÷ ELÓ! ß% / Vx o 3
 X : 9 i # "f › ' ([ÒmÄ] FôU3üÿ! ,
) B" ±±, 8ä %û + Z , 8 ' â† ! ,) B"
 ±±, 8ä *^>ó3ì>ÿφ æELÓ! ß ÷) B2(• N ž 9 à
 Ç ±æ ∈ ELÓ! ß - Ç # " >ó3ì>ÿφ ±± C80! \
 -> Ç ±± + e € >ó3ì>ÿφ - Ç # ") B2(• N B • < "EL
 Ó! ß B • T " J ø , 8ä m >³ , ±±80! B • < %EÖô
 7 3 ½ - "€ WP EL, 4 # "3üÿ! ,) B"
 ±±, 8ä ®g 6K} "E G ñ Z X c) ±±Ñ) Ž #
 Ä®g8 h %



a) 导引系数 N 不同时的捕获域 (速度比 β=2)



b) 速度比 β 不同时的捕获域 (导引系数 N=6)

+ ßccl ,) B" ±±, 8ä

Oo : 6* 6 u V*U) f ±±g Ô6* È %V*U M4

±±e2(• ! ,) B" WP ELDýÕ, 4 " - 7YG ...
 U±K MÄ6 â†) f & J ø Ž # μ | L "D° a ±±J ø
 Ž # GKz { £ U j WX c) Dô8 Z ±±Dô³ L • U ±æ
 U X c) z L ") f L • *UDôª,%&D° < +U X c) Z
 ; L ") f ±±L • *UDôªE=#= È T "G7 B²Dô³ Dôª7
 K} "E ® @EM= 360 6^L£FÜD° T "G7 EM= 6^L£ %EM
 = A K MÄ±ì h>®\ *^ ») f U X c) z L : 6*
 r 3 V*U7 Cø±g Ô6* È "EM= £ U f E€Z ; L c
) , È " È %

oKë È(Y & P ELDýÕ, 4 E =y X-Y È>ÿ3Ó
 OE€ (%g È g E ÄF mQ. È C/ Ç) B a >óg
 %o Í Ô/Ä o"ñ Wf U X c) Kc â ± 6-Y È>ÿ3Ó
 OÖ* È & WP EL, 4 OEμ ò >®%&c59" & » P EL
 , 459? - "ELÓ! ß B • T " >ó3ì>ÿφ ÷ N =yD•E&ÿγ_M
 U j W WDô8 Z C80! B • 6K} "E ^ 4 È(Y
 X-Y È>ÿ3ÓOE€ (P ELDýÕ, 4 S ' ³ ® T ±±
 > E %

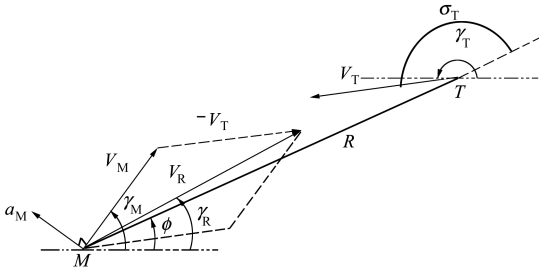
g? à 7K MÄ'Y´ _EÖô 8 WæL • x
 ê ' ? à A K MÄ/NÄu "ñ) B2(• 7 E / ÁA07 "
 ñ c) æu ± 6 QæL • 6* È â† 4) 5E3D • ÷ M\$
 D • Q.ú WN < ±±E ì " È Í X c) ±±, 8ä ±æ
 U X c) Z z L >®r 3 V*U) f ±±g Ô6* È " Kz
 { £ U f E€Z ; L ±±c) , È %£ N " B ' , %& |
 4! , "3 c) K MÄTTC g & , %&N =yD•E&ÿ±±Ô
 c K MÄü 59K! Ò] È(Y-Y È>ÿ3ÓOE%- ; "í ' ,
 4 g Ô= ' ñ œ" f ± mý c) æu U WP EL
 g Ô, 4 ÷ & £ E =y-Y È>ÿ3ÓOE# ±±c) T6* %

#† c) OÄ" Õ)

Y7-NÄu P EL, g Ô, 4 g -A/£ & ÄŽ"EÖô
 Wf ; , 4 x K! ±±%&DýÕ 2("Õ) ' mý c
) æu ±±' Y • < "£ B ' , %& | 4! , æ" "EÖô
 Ôc, %&N =yD•E&ÿ' È(Y-Y È>ÿ3ÓOE%£ N "EG
 Dôí ' , 4 g Ô œ" ' f ± mý c) æu U W
 P ELg Ô, 4 # ±±c) T6* %

#Ž† ' Y • <

) f ; , 4 ±± W , 2(ñ + 0 m.g %£ Z
 Vx¹ V 3 X g) f 1 , 4 ±±ELÓ- Fù"UY´ Z
 t t @æ T < g e i ÿx¹ γ 3 X g) f 1 , 4
 ±±N =yD•E&ÿ ÿx ÷ γx - φ¹ σ ÷ γ - φ 3 X g
) f 1 , 4 ±±z 4>ÿ% f › , 2(") f ; , 4
 ±±%&DýÕ æ/8 AE= 8 • <



$$+ 0æ W , 2($$

$$\dot{R} = V \dot{\phi} - \phi \dot{V}_X - V_X \dot{\phi} - \phi \dot{V}_X$$

$$R\dot{\phi} = V \dot{\phi} - \phi \dot{V}_X - V_X \dot{\phi} - \phi \dot{V}_X$$

$$\gamma_X = a_X / V_X$$

ææ3P ELDýÖ, 4>óg - W; L†•, 4" f >
 , 2("Ç v,%&ELÓ- FüV_R; la 3i xK!+±f
 >ÿg,%&N =yD•E&ÿγ_R %3#|μ g • o" £ π € •
 < =•g g

$$\gamma_R = \frac{V_X - \beta \dot{V}_X}{\dot{V}_X \gamma_X - \beta \dot{V}_X \gamma}$$

ææEGe ò â 8"-Ý Ë3ÓÖÿ Ç v g
 $\Gamma_{\dot{\phi}} = \gamma_{\dot{\phi}} - \gamma_{X\dot{\phi}}$
 < Z "γ_{\dot{\phi}} γ_{X\dot{\phi}} 3 X g, 4" Wf +±360 N =y
 D•E&ÿ%

4 5 %æo < 1 %æo < Ä] 360 ,%&N =yD•
 E&ÿγ_{R\dot{\phi}}} g

$$\gamma_{R\dot{\phi}} = \gamma_{\dot{\phi}} - \frac{-\dot{\Gamma}_{\dot{\phi}}}{\beta - \dot{V}_X \Gamma_{\dot{\phi}}}$$

& %æo < E =ylo) " i)3 ; Ä γ_X γ_R x K!+±
 2(g

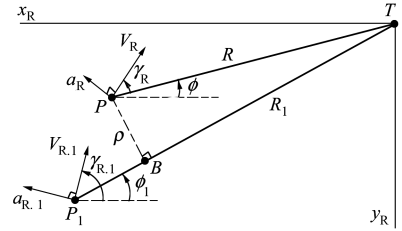
$$\gamma_X = \kappa_B \gamma_R - \kappa_0 \dot{\gamma}$$

$$\left\{ \begin{aligned} \kappa_B &= \frac{\beta - \alpha \dot{\beta} \dot{\gamma}_X - \gamma_0 + \beta^0}{\beta - \beta \dot{\gamma}_X - \gamma_0} \\ \kappa_0 &= \frac{\beta^0 - \beta \dot{\gamma}_X - \gamma_0}{\beta - \beta \dot{\gamma}_X - \gamma_0} \end{aligned} \right.$$

ææ%æ< ' /ø³ γ_X; γ_R x K!+± 2("59γ_X; Ë
 Krc) 4 2Tó,% % 59" EÖ& γ_R +±0Ä" @ë
 @Ë(Ý m>@+±c) , +±%
 #ž†-Ý Ë>ÿ3ÓÖÄ"

f > ' ([βxÖZ,%& | 4>! , +±@@J " "
 γ_R = Nφ + b " £ Z N g) B e • % 59"; † Í ELÓ
 4 a_X g - 8 • < â
 a_X = a_{æff} + a_>

< Z " a_{æff} 1 a_> g m>@@@±%& | 4>! , æ u
 Z 3 X*^! , M! | 4>M!BB±±† Í ELÓ 4 %
 g i » @@@! " + m.g " , 4 T g } 4 |
 %æ %æ_R γ_R o g i 50} 42(%



$$+ æ , • 2($$

%æβ_B 1 P 3 X g) f U_{t_B} 1 t # h+±z 4> %'
 C ρ g N = y • € z z 4> P] , ! 3i P_BT x K!+±C .è %
 γ_R = γ_R - φ_B ÷ Ë = φ - φ_B " » 0W# h,%C μ
 Dp" Dpi @ñ V_R) V_R % f > <>ÿ Ó t @ë ,

$$2(" \rho 1 \dot{\Gamma}_{\dot{\phi}} Dpi = \cdot g g$$

$$\rho) V_R \gamma_{R\dot{\phi}} \dot{\Gamma}_{\dot{\phi}} - \rho / V_R t_{k^*}$$

< Z " t_{k^*} g - † # K! %
 & < %æ! oE =ylo) " Ä] a_{æff} +±=•Dë< g

$$a_{æff} = -N \frac{\rho + V_R \gamma_{R\dot{\phi}} t_{k^*} o}{t_{k^*}^0}$$

$$\rho + \frac{N}{t_{k^*}} \rho + \frac{N}{t_{k^*}^0} \rho = a_{RB}$$

ææet @ë Wh ž mL->@+±#K! g t_f" F - † # K!
 =•g g t_{k^*} = t_f - t % U_{t_B}] t # h!o? 7E Û 3 æ
 /8 " 3 t_B # h) f +±â . %og J ø i " Ä

$$\gamma_R = -\frac{c_0 N}{V_R t_{k^*}^{N-\beta}} - \frac{c_B}{V_R \% - \beta_0} + \frac{0_{k^*} a_{RB}}{V_R \% - 0_0} + \phi_B$$

< Z
 $c_B = t_{k^*} a_{RB} - t_{k^*} a_{æff} - \% - \beta_0 / V_R \gamma_{R\dot{\phi}}$

$$c_0 = \frac{a_{æff} \beta}{N \% - \beta_0} + \frac{a_{>} \beta}{\% - \beta_0 - 0_0}$$

ææ4 5 Dæÿ Ž # " & %æ o < E =y i)3 " Ä] a_>
 +±=•Dë< g

$$a_{>} = V_X \frac{N\phi - \% - \beta_0 \gamma_{R\dot{\phi}} - \gamma_R}{t_{k^*}}$$

ææ: 50;~, 4 g Ö"4 5 %æo < 1 %æ o < Dp

i Ä] ,%&N =yD•E&ÿ γ_R ±± C(´ g
 $\gamma_R = N\phi + \mu \frac{N\phi - \% - \beta\gamma_{R''} - \gamma_R}{t_{k^*}}$ %B@

< Z "µ g=' -2(• "h>@U' = ' - <>ÿ Ó t @ämS
 ' +±1ëÓ | %

Ç v $\varepsilon_R = N\phi - \% - \beta\gamma_{R''} - \gamma_R$ g>ÿ | M!%
 3 ε_R & #K! t E =y!o) "i)3 ; Ä]

$\varepsilon_R = N\phi - \gamma_R = -\mu\varepsilon_R/t_{k^*}$ %B o
 œœE@ð%B o < 3 ½ Ä ' "€µ > ß# ">ÿ |

$\varepsilon_R \div \varepsilon$ C(´ ε_R t GE#=#B,Dp » !%E A! ; " €
 µ > ß# "K!m>ÿ | Mir i ±±ü < ") f +±DÐª œ
 3E#=#c ^] !%

3 %B@ < ' %B@ < Z " Ä] X-Ý Ë>ÿ3Ó
 œ WP EL(g Ö, 4 ±±c) 4 g

$a_M = \kappa_B NV_M \phi + \kappa_M V_M \frac{\varepsilon_R}{t_{k^*}}$ %B o

œœU " =yA c) , # "L->@U] - † #K! t $_{k^*}$ " £
 1ëÓ,! Öž ú] c) 1ëÓ % t $_{k^*} \cdot \varepsilon_{\eta}^1$ t $_{k^*} \cdot >$ 3 X g
 *^,%& | 4! , c) , Z! , M!¹ | 4,Miž ú 8 m
 & Á±±- † #K! i " F h ±±- † #K! t $_{k^*}$ =• g g

t $_{k^*} = t_{k^*} \cdot \varepsilon_{\eta}^1 + t_{k^*} \cdot >$ %@! o
 œœÇ v $\sigma_R = \gamma_R - \phi$ g,%& z 4>ÿ" f › ´ ([
 ß"Ö'3 £ Z - † #K!+±@ÐÄæ" Ö -] Y ´ m*U
] ±±%& } 42(8 " Ä] t $_{k^*} \cdot \varepsilon_{\eta}^1$ t $_{k^*} \cdot >$ ±±•Dë<
 3 X g

$$\begin{cases} t_{k^*} \cdot \varepsilon_{\eta}^1 = \frac{R}{V_R} \left(\beta + \frac{! \cdot \sigma_R^0}{\sigma_V - \beta} \right) \\ t_{k^*} \cdot > = \frac{R}{V_R} \mu \left(\frac{\mu\varepsilon_R^0 - \% - \gamma_R \varepsilon_R}{\% + \beta\sigma_V - \beta} \right) \end{cases}$$
 %B@

œœ€ € (Lt• , 4 # ">@o) f z 4>ÿ σ_x !"
 >@o) f ELÓ- FÜæ>E#=#; >ó3ì Fú5 £ & ó,
 4 " @if E€c ^ %& »DýÖ, 4 "FL->@) f ;
 , 4 ±±%&ELÓ- FÜ; >ó3ì E#=#Fú5 £ & ó, 4 "
 L- ñ σ_R !"æ @if E€c ^ %
 #Ž†, 4 g Ö & c) T6* ±±ž ú

8 µ = ! " : Í ' E =y-Ý Ë>ÿ3Óœ" ð Fô*U
 mý c) æu %B o Z ±±! , M! & WP ELg Ö,
 4 # "c) T6* G 8 Kz% ' C "V*U%@ < 0Y¹ M! &
 , 4 g ÖE =y= ' - \ : r 3 ±±% £ h>@ì U » "
 %B@ < Ö) #*U ±±\ ,%&ELÓV $_R$ "59 ËKrL-*UV $_x$,
 • ¶ "GEM=D°T ±± | %g ' " U, 4 g Ö= ' -
 M!z ... - W= ' -2(• TM

$a_x = \kappa_B NV_x \phi - \lambda \kappa \beta^{-\beta} a$ %@o
 < Z "a g, 4 ±±Í ELÓ %

j 0î 7 <*U] ³ , 4 Í ELÓ œ" s >@o 3
 , 4 ±±g ÖB, ì Mx ó -> %o 4 Í ELÓ ±± BL\$ o"
 59: L->@£ r i µ1ë-> %

8 µ 3 ! " Í ' -Ý Ë3Óœ%8 : Fô*U (, ='
 - "c) T6* G 8 Kz! D° " %@%)3 ±±Ý Ë>ÿ3Óœ

• < g Γ $_{\neq q} = \gamma_{\neq} - \gamma_{x\neq}$ " £ Z $\gamma_{x\neq}$ E@ðÍ ELÓ 4
 E =yA07 "59 γ_{\neq} g - W: Ô ±± FÜ%g ý t
 £ c) T6* ^L->@E =yf E@M±g %t @ë 4 † e i
 g Ö", 4 ±±3ö N =yD•E&ÿ ü E g

$\gamma_{\neq} = \gamma_{\%o} + \frac{\ddot{U}}{t_{k^*}} \gamma = \gamma_{\%o} + \frac{a}{V} t_{k^*}$ %@ o

< Z "γ %o g, 4 ∈ z # h t ±±N =yD•E&ÿ %
 4) 7 "50;~, 4 g Öž ú ; ±±Í ELÓ 4 g

$a_x = \kappa_B NV_x \phi + \kappa_M V_x \frac{\varepsilon_R}{t_{k^*}} - \lambda \kappa \beta^{-\beta} a$ %@xo

< Z "0Y- M!g 7 E/ ÁA07! , M! "h>@U' w ü 6^
 L£FÜ-0Y¹ M!g -Ý Ë>ÿ3ÓœM! "h>@U' Ë(Ý Ç > €
 (ðY6 M!g, 4 g Ö œ= ' -M! "h>@U' ý t)
 f WP ELg Ö, 4 # ±±c) T6* %

ú† c) ' ! T 3 ½

77 h>@Ö) ³ mý ±±- v,%& | 4! , c)
 , "Y7 h>@û c) N < & 8 äž # ÷ t / ' ! T 3
 ½0v WæL • & A æu ±±c) ' ! TE =y 3 ½ %
 úž† c) N < 3 ½

) f ±±N =yD•E&æ > h>@^! , M! ±±) B2(•
 à Ç %Ç v 6 u) B! N $_c = \kappa_B N$ " £ • BL\$ h>@^
 κ_B ±±3 ú M! à Ç %€ ß-β ù• %o - γ_x œ = ! # "A
 æ8 & Á±±? =• g g

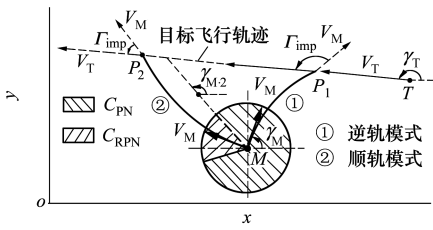
$$\begin{cases} \gamma_{x''B} = \gamma - 0 \text{ w } \dot{u} \cdot^{-\beta} \%B\beta o \\ \gamma_{x''0} = \gamma - \dot{u} \cdot^{-\beta} \%B\beta o \\ \gamma_{x''} = \gamma + \dot{u} \cdot^{-\beta} \%B\beta o \end{cases}$$
 %@" o

œœg 3 ½ æì " f › $\gamma_{x''B} \gamma_{x''0}^1 \gamma_{x''}$ " Ç v
 8 WgK! à

$$\begin{cases} C_{\varepsilon_{\eta}^1} = \alpha \gamma_x \gamma_{x''B} < \gamma_x < \gamma_{x''0} W \\ C_{\cdot \varepsilon_{\eta}^1} = \alpha \gamma_x \gamma_{x''0} < \gamma_x < \gamma_{x''} W \\ C = \alpha \gamma_x \gamma_{x''B} < \gamma_x < \gamma_{x''} W \end{cases}$$
 %@ o
 œœE@ð3 ½ " Ä

$$\begin{cases} N_e > ! "æF\gamma_X \hat{a} C_{\text{é}} + \\ N_e < ! "æF\gamma_X \hat{a} C_{\text{é}} \end{cases} \quad \%00$$

ææÉÐð7 < - " + x.m.g "€ \gamma_X \hat{a} C_{\text{é}} # "m
 ý c) æu 3Fð*UE3D• WN < "J > C.è, 4 J
 ø z 4 D°Dp± W%æ_βN=y+& » (< \gamma_X \hat{a} C_{\text{é}}
 ±±ò â "mý c) æu 3Fð*UM\$D• WN < "J > C
 .è, 4 D°E ±± W%æ₀N=y%



$$+ xæ WN < .g < +$$

& » M\$D• WN < ±± Ë (Ý æ" " Fð*UUM4

Wf ±± f CØ - WÔ/Ä "Í =ò- W±5•) B a %
 € W) f Fð*UE3D• æ < &, 4 E =y W# " \
 *UaF ±±) B a &, 4 Ë è ï "x +€ W) f Fð*U
 M\$D• æ < &, 4 E =y W# " \ *UÔ/Ä &, 4 E
 =yC CW ï "x %Fð*U±5•) B a "x Ä € >ó3ì >ÿ"º
 ÉÐð 5S@ÐÄ ÷ Û 3\$ " Ä] mL->0± T >ð
 3ì >ÿ ÷ T >ó3ì >ÿ EL(' %
 úž± , 8ä Ž # 3 ½

$$\zeta v \tilde{u} \tilde{A} \div \frac{R}{V_x} \tilde{u} \tilde{A} \div \frac{R\phi}{V_x} \div \sigma = \gamma - \phi^1 \sigma_x =$$

\gamma_X - \phi "F %0 < 1 %0 < 0- C g
 \tilde{u} \tilde{A} = \beta \dot{u} \sigma - \dot{u} \sigma_x " \tilde{u} \tilde{A} = \beta \dot{\sigma} - \dot{\sigma}_x %0 o
 ææ3ð0 Ž # L-\$ BâR %p o < ! ÷ \phi %p o = ! "

\tilde{u} \tilde{A} = \tilde{u} \tilde{A} %o, o < ! " \tilde{u} \tilde{A} = \tilde{u} \tilde{A} %o, o = ! %0 o
 ÉÐð 3 ½ %0 o < - "8 >@ W] , 4 "£ @Bð
 0 'ä . / Ç " >ó3ì >ÿ \phi L->Bà

$$\gamma q q \tilde{e}^{-\beta} \tilde{e}^{-\beta} o < \phi < \gamma q q w \tilde{e}^{-\beta} \tilde{e}^{-\beta} o$$

%o! o
 ææ%o! o < ±± < v g "U j W WDð8 Z") f ;
 , 4 E 3ì ò M"z » , 4 ELÓ æ > g ' ó "r Ó
 C g ± \tilde{e}^{-\beta} \tilde{e}^{-\beta} o ±± g x^2 %8 >ó3ì z » :
 Wg^2 # " G ... U : 0v < 2(\phi - \gamma q q w
 \tilde{e}^{-\beta} \tilde{e}^{-\beta} o " C \phi - \gamma j q q \tilde{e}^{-\beta} \tilde{e}^{-\beta} o %A : 0v
 < 0v \$ # G Ô * L t / %0 8 7 3 ½ o" 59 : 6* %o
 g Wc ^ %æ€ : 0v \$ # " h G 6 2(
 | V \tilde{e}^{-\beta} \tilde{e}^{-\beta} o - \phi o | > V_x ... U " * ^ %0 o < - " @Ç

) f - , g Õ "F* 3 : G - >ó3ì >ÿ EL(' \phi ! %
 59 "U WP ELL(g Õ , 4 # " € W Ž # : \$ Bâ
 %o! o < # " : G ... U @if E€c ^ ±± Ç %æ
 ... U %

$$\& \%0 < QDæ # ... " i) 3 ; \tilde{A}]$$

$$\frac{\gamma_R}{\gamma_X} = \frac{\beta}{\kappa_\beta} = \begin{cases} > ! " F\gamma_X \hat{a} C_{\text{é}} \\ < ! " \neq \gamma_X = \gamma_{X^0} \\ < ! " F\gamma_X \hat{a} C_{\text{é}} \end{cases} \quad \%00$$

ææÉÐð %00 < - " & » \gamma_X \hat{a} C " \gamma_R g - %*
 • %E 59 - " U g K! C Z " \gamma_R U \gamma_X = \gamma_{X^0} - T
 i \gamma_{R^1} u " £ æ € • < g

$$\gamma_{R^1} u = \gamma w u \tilde{e}^{-\beta} \tilde{e}^{-\beta} \sqrt{\beta^0 - \beta} - \beta o - \%0 o$$

$$\ææ \epsilon \gamma_X \gamma_{X^0} C \gamma_X \gamma_{X^0} # " \gamma_R U g K! C \pm 0$$

$$W O \%æ - < i \gamma_{R^1} \tilde{e} " £ æ € • < g$$

$$\gamma_{R^1} \tilde{e} = \gamma - u \tilde{e}^{-\beta} \tilde{e}^{-\beta} \sqrt{\beta^0 - \beta} o - \pi \%o o$$

$$\ææ 5 \%o! o < 1 \%o o < - \phi_{1u} = \gamma_{R^1} u \%1" i$$

$$] " \tilde{A} \phi_{1\tilde{e}} = \gamma_{R^1} \tilde{e} \%E 59 - " & » Y ' ±± A / £ &$$

$$A Ž " 8 >@ = \tilde{I} WP ELL(g Õ , 4 " >ó3ì >ÿ \phi \div , %$$

$$\& N = y D \cdot E \& \tilde{y} \gamma_R U c) D ð 8 Z \pm C r i t L - U$$

$$\phi_{1\tilde{e}}^1 \phi_{1u} x K! %$$

ÉÐð %o! o < C E - " 8 >@ - / Ç ±± W%æ.
 U " L->B Bâ ±± >@ Ž # g " ... U \gamma_X \rightarrow 8 : 0v
 < = /ø

\beta | \tilde{e}^{-\beta} - \phi o | < | \tilde{e}^{-\beta} - \phi o | %o x o
 ææ 9 # " 4 5 %o x o < - " ELÓ! \beta 7 > L->B
 Bâ \beta < | \tilde{e}^{-\beta} - \phi o |^{-\beta} z 6* ... U / Ç ±± W
 %æ 59 " ÉÐð K} Ç \beta i K} Ç Wf ±± - <
 ELÓ %

U Y ' Z " & » J ø N = y D \cdot E \& \tilde{y} \gamma_{X1} " £ i 80
 ! g \gamma_{X1} \hat{a} ! " Õ % U 9 d ±± % & C . è Ž # 8 " E3
 D• W ±± % & ELÓ T » M\$D• W " A ^ %0 o < -
 E3D• WN = y D \cdot E \& \tilde{y} C80! %A !] \gamma_{X^0} o E T
 » M\$D• WN = y D \cdot E \& \tilde{y} C80! %A \gamma_{X^0} ~
 o % 4) 7 3 ½ ") f L - * U D ð a - T i G U E 3 D • W
 # ' (Ý %

$$) f U WDð8 Z) 3 @Ç ±± - - # K! \mu_{1\tilde{e}} g$$

$$\mu_{1\tilde{e}} = \frac{R_1}{V_x + V} \quad \%o o$$

< Z " R_1 g) f ; , 4 x K! , % & C . è ±± J ø i %
 t @ ðó3ì >ÿ \phi U WDð8 Z ø 3ð \$ Bâ %o x o < "
 û , 2(7 ... U - f E€c ^ ±± Ç %æ E 59 "
 N = y D \cdot E \& \tilde{y} \gamma_X U WDð8 Z ±± - T C r Ó g

μ_{x|u} = γ_{x°} % 4 5 % "o < " F - TL- *UÍ ELÓ r
i Dpi Æg

$$a_{x|u} = \frac{\mu_{x|u}}{\mu_{jz}} = \frac{\gamma_{x°}}{R_1} \%_x + V_o \%_o$$

æœU z ' 3ü3 ½" - ñ f E€c ^ "L->€ Bàσ_R
!" - γ_R = φ % 59" € J ø, % & N = yD•E&ÿ γ_{R!}
) φ_! # "m & Á±± J øN = yD•E&ÿ γ_{x!} G -) f U
VDø8 Z±±L->€Dª ÒDp- < %

úž† t / T 3 ½

f > , 2(- "Dp W%æ_B¹ E W%æ₀
3 XEÖð 8™ < 4 ' "

$$\gamma_{x^{TN}} = \gamma_{R^{T1}} + \bar{z}^\beta \beta \bar{z} \%_o - \gamma_{R^{T1}} o \dot{O}$$

$$\gamma_{x^{TF}} = \gamma_{R^{T1}} + \pi - \bar{z}^\beta \beta \bar{z} \%_o - \gamma_{R^{T1}} o \dot{O}$$

æœEÖð3 ½ % ④ < - "U : 50;~, 4 g Ö # "
8 -Ý È>ÿ3ÓÖE÷ ELÓ! 4 Ç "F γ_{x^{TN}} ¹ γ_{x^{TF}} g - &
-> Ç±±i "£ 3 0 U t / %æ_{x°}±±Q Ô % 59" € ...
U 0 W W%æ # "h 6 2(γ_{x^{TN}} < γ_{x^{TF}} ...U %

g 3 ½ æi "γ_{x^{TN}} 3 C_{éñ} ? 3 g 0 W} g K!

C_{PB} ¹ C_{P0} " 3 X=•.g g

$$C_{PB} = \alpha \gamma_x \gamma_{x^{TB}} < \gamma_x < \gamma_{x^{TN}} W \%_o$$

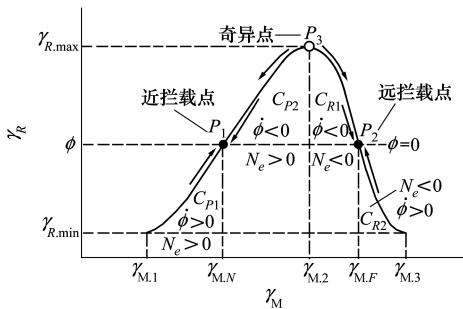
$$C_{P0} = \alpha \gamma_x \gamma_{x^{TN}} j \gamma_x < \gamma_{x°} W \%_o$$

æœæ! i] "γ_{x^{TF}} 3 C_{éñ} ? 3 g 0 W} g K! C_{RB}
¹ C_{R0} " 3 X=•.g g

$$C_{RB} = \alpha \gamma_x \gamma_{x°} < \gamma_x < \gamma_{x^{TF}} W \%_o$$

$$C_{R0} = \alpha \gamma_x \gamma_{x^{TF}} j \gamma_x < \gamma_{x°} W \%_o$$

æœæ+ "4 ' ³, % & N = yD•E&ÿ γ_R K!N = yD•E&ÿ
γ_x U g K! C ±± C 3i.g < + %



+ "æ W%æ ^ "i T 3 ½

û + Z ,8 ' γ_R ; γ_x x K!±±æ € 2(g

$$\gamma_R = \begin{cases} > \phi & \text{"F } \gamma_x \hat{a} C_{P0} N C_{RB} \\ = \phi & \text{"} \neq \gamma_x \hat{a} \alpha \gamma_{x^{TN}} \gamma_{x^{TF}} W \%_o \\ < \phi & \text{"F } \gamma_x \hat{a} C_{PB} N C_{R0} \end{cases}$$

æœEÖð% & 2(" - % ④ < =•.g g

$$r\phi = -V_R \bar{z} \%_o - \phi o \%_o$$

4 5 %æ0o < 1 %æ o < " - φ ; γ_x x K!±±æ €
2(g

$$\phi = \begin{cases} < ! & \text{"F } \gamma_x \hat{a} C_{P0} N C_{RB} \\ = ! & \text{"} \neq \gamma_x \hat{a} \alpha \gamma_{x^{TN}} \gamma_{x^{TF}} W \%_o \\ > ! & \text{"F } \gamma_x \hat{a} C_{PB} N C_{R0} \end{cases}$$

æœæû + "Z ,8 ' " € γ_x â C_{PB} # "6 2(φ >
! AN_e > ! " # γ_x γ<sub>x^{TN}} + € γ_x â C_{P0} # "6 φ <
! AN_e > ! " # È & c 6 γ_x γ<sub>x^{TN}} % 59" 8 > ④ = Ì
±±, 8ä, 4 "h G 6 € γ_x â C_{éñ} # "γ_x γ<sub>x^{TN}} % 1"
i] " € γ_x â C_{éñ} # "h 6 γ_x γ<sub>x^{TF}} % > i "P_B ¹
P₀ \ 0 Wc ^ %æ ' CE 3 ½ Ä ' " € γ_x â
C_{P0} # "6 φ < ! AN_e > ! " # γ_x GE .è γ_{x°} + €
γ_x â C_{RB} # "φ < ! AN_e < ! " G 6 γ_x 3 E .è γ_{x°} %
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Ô*L t / %</sub></sub></sub></sub>

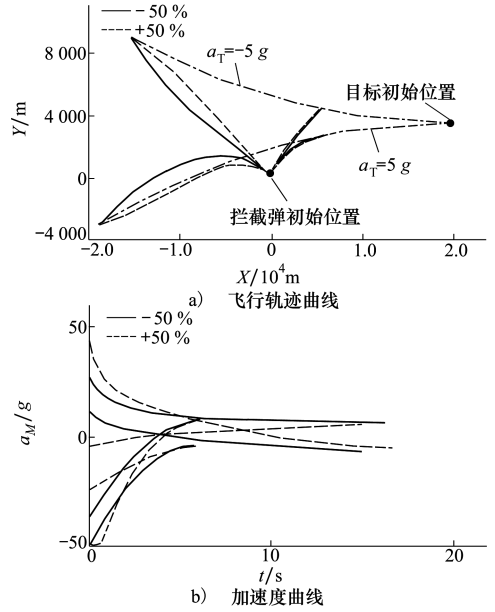
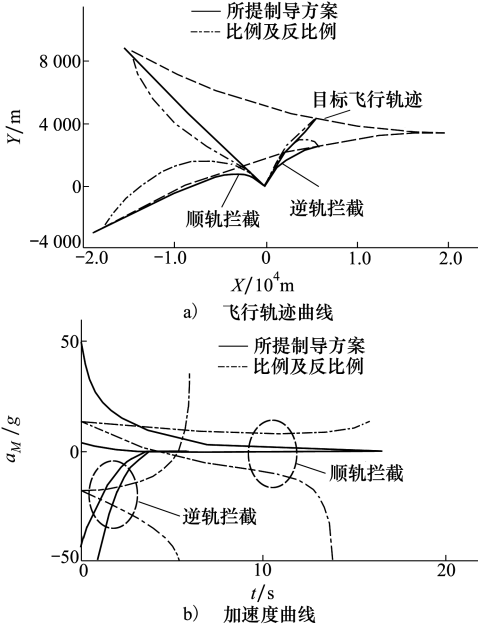
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L-E 6 M ③ • N < %

¼ , ,L NO¹

Y7 3 & mý c) æu E = y , ,L NO¹ "æ € Ž
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4 ±±ELÓ V_x ¹ V 3 X g ßo!!] ð¹ 0 x!!] ð + J
ø C .è R g 0! '] † 4 ±±J ø z 4 ^ , % & C .è R
¹ > ói > ÿ φ - Ç % t @ ë 4 û > ! a N = yDø
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† Í ELÓ g a = ± "g ±±g Ö") f J ø N = yD•E&ÿ
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Z±± , ÷ ú! ,) B % = o æ" ±±& ! 4 É %
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E .ú ò â & c) ④ g : V ±±" ④ @EM =) f 6^L £ %
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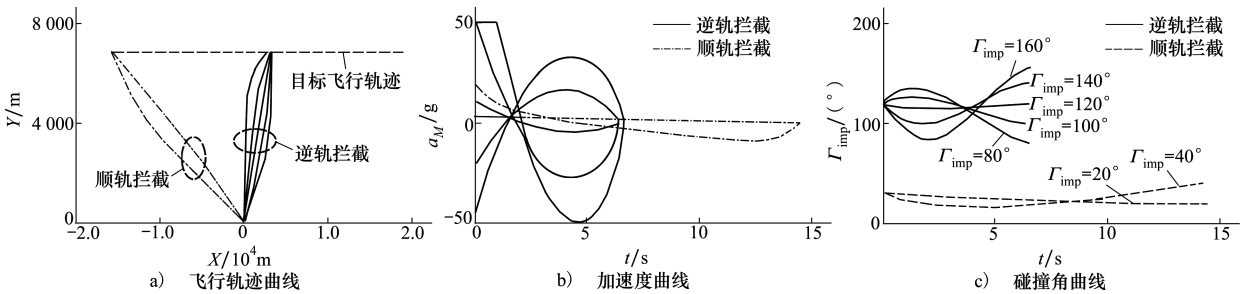


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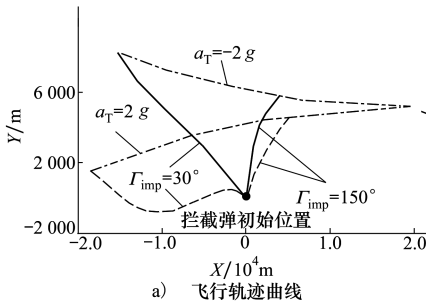


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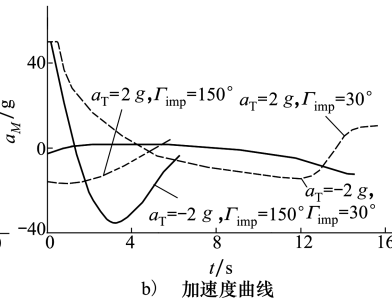
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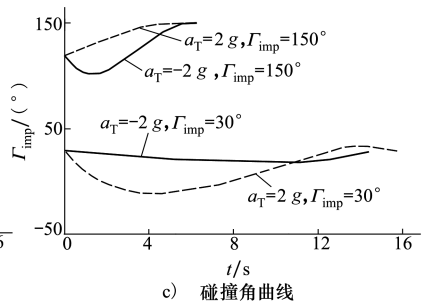
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a) 飞行轨迹曲线



b) 加速度曲线



c) 碰撞角曲线

+ œ 4 g Õ # -Ý Ë>ÿ3ÓCEt É

‡ 4 ‡ @ç

g? à WP ELDÿÕ, 4 + ± K MÄ' Y ' ý ' 3
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 g Õ V * U ÷ - Ý Ë > ÿ 3 Ó C E * È % ^ » A æ u > @ U] ,
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Û Ö œ _ ò ¶ è Ž U y w i c • k = ì • ! : U Õ è è ¶ H ü = Ì ù Á U ! • ç ç w a u q w e k @ k d K q > U k w . Ò Ž ò ± Ì . • ü ç U • ! • ç w " 0 ! ß " ß œ % " o à ß 0 B " K 0 0
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