

JYScãÑÑs ys-vÑÓ yÓ ÓÑŷ SéÑ# Ó ú áÓÓÓ

# ' » WK` 3 +± WK` 9 ' D•E€D™ æ u

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%-D GT " 1è- c ) ; Ô c-A/£ m"K,>->-¶ œ®!®o

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c D•E€f • " £ ý ' ³ - .ú 3 â Ô c +±0f\*\* ' Ô c  
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c/l L ÄO! B KßK®

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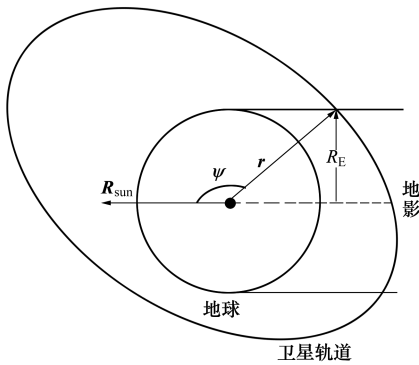
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 > n 1 WK` v æ> e<sub>r</sub> ± f > ÿ α / g JR > ÿ " Ç v g  
 !" / 00n U € ] !a L• 7 ± ± Ä ž ; D•E€• x K!  
 ± f > ÿ δ / g # ð > ÿ " Ç v g !" 0 Ò %  
 % U U WK` 3 L• 7 ± ± v , í ELÓ f<sub>s</sub> =• g g

$$f_s = \frac{G_s P}{m} \dot{u} \alpha_n \quad \%o$$

< Z " P g v , , g " UC .è WK` 3 Ó ßõ ± ± z 4 > 6 P  
 ) x " × ß ð ¶ ð ð k<sub>s</sub> g • } " UKaž Z !"   
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 w ± 0v » ] ) 0 w ± R<sub>6</sub> ± ± 3 € %



+ œ ] ž 3 ; 7W • D•E€! ± ± 2(

@ ð WK` z 4 > - FÛ R ð ; ~ L ± ± z 4 > - FÛ r x K!  
 ± f > ÿ g ψ % + mg o " F

$$\dot{u} \psi = \frac{R_{\dot{u}_i} \frac{1}{r}}{|R_{\dot{u}_i}| r} \quad \%o$$

œ æ r g ~ L ] ð C % ~ L U ] ž ² m \$ B à ± ± ž  
 # g

$$\begin{cases} \dot{u} \psi j ! \\ \Rightarrow \psi < R_g / r \end{cases} \quad \%o$$

ú ž WK` 3 - E 4 >

WK` 3 Ò È ± ± T < 1 æ > t ] WK` v æ > ± ±  
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 3 FÛ - T % • ù ç w ð 0v ßõ - \* U - E Ò c ) 3 @ &  
 m F - E Ò c , E = y ³ T M < Ò ) " £ Ä ' 4 É %

( - W æ > - FÛ u " Ç v A æ > ; WK` v  
 æ > ± f > ÿ Ç v g α<sub>u</sub> " i 80! !" Ò % WK` v ,  
 È æ > ; WK` v æ > f > ÿ : 6 \* B ² D ð ! " > @ - WK`  
 v , !i u ± ± æ > 3 FÛ - T " WK` 3 , . Á \$ B à ð  
 ß on " u " e<sub>r</sub> 6 5 2 ž L • +  
 0 o JR > ÿ α \$ B à - 8 2(

$$\alpha = \begin{cases} ! " \alpha_u = ! \\ U \dot{u} \dot{u}_i \frac{- \dot{u} \alpha_u + \sqrt{\dot{u}^0 \alpha_u + \dot{u}^0 \alpha_u}}{\times \dot{u}_u} \\ \alpha_e \alpha_e ! < \alpha_u < \\ 0 " \alpha_u = \end{cases}$$

œ æ j ) 3 , 2( ! o Ä WK` 3 - E 4 > g

$$n = \frac{\dot{u} \alpha_u - \alpha_o}{\dot{u}_u} e_r + \frac{\dot{u}_u}{\dot{u}_u} u \quad \%o$$

¼ ( Î 3 ½

¼ ð D•E€ Y > @

Y ' ± ± ( Î @ Ç g û - W D { ± ± WK` 9 ' Dp 3  
 D•E€ 7 - W D P ± ± WK` 9 ' Dp 3 D•E€ %

\* ^ ] ) 0 L ( ) 0 • q Ò J<sub>0</sub> M i B B ± ± D•E€ t Ñ % ð  
 3ü C ( ßõ g

$$\dot{\Omega} = - \frac{J_0 \sqrt{\mu}}{a^0} \frac{R_E^0}{\beta - e^0} \dot{u} i \quad \%o$$

< Z " R<sub>6</sub> g ] ) 0 t w ± % WK` 9 ' D•E€ ± ! % æ  
 Ω ; ] ) 0 T M D E L ( , % 9 " Ω = Ω<sup>M</sup> = ! " " / > " û  
 59 - D•E€ • ; WK` v æ > ± f > ÿ ø 3 ð : % ' W  
 K` 9 ' D•E€ Á @ @ Í E / ± ± a " e " i " - Ω = Ω<sup>M</sup> %

û % ßõ < , 8 ' " - Ω È T ± ± x â g â U ! °  
 ~ ß ! ° 80! ² È T i " ü < a C È T e " ú x - Ω ü <  
 ± ± x â g â ü < i " È T a C ü < e %

½ # † K z Ñ % ð æ #

D•E€ z Ñ % æ Á ± ± ] æ # H<sub>d</sub> \ WK` 9 ' D•E€  
 ± ± - W 4 4 " @ ð Ä T M < - 8

$$H_d \%o = \Omega \%o - \alpha_s \%o \dot{u} \beta ! \times \beta \%o$$

< Z " α<sub>s</sub> g WK` B ' 3ü " £ C ( 0v » Ω<sup>M</sup> \ We  
 • % , 8 ' " ∈ J ø # K! 1 J ø t Ñ % ð 3ü - Ç  
 # " H<sub>d</sub> \%o ; Ω \%o 6 % WK` 3 ± ± Ò È μ < " :  
 6 \* ( < Ò c H<sub>d</sub> \%o " s E ð ð & Ω U - Ç 80! ²

E =y ŪA0%Y´ @Ĉ ( Ĩ g . - 3đD•EĚkzÑ%ϕ  
æ# ¹ J øD•EĚ- 7! ” H<sub>d</sub>%<sub>q</sub>o=H<sub>d</sub>%<sub>q</sub>o%

‡ Ô c 0f\*’

ŽĪ í p3ñ5 Ô c ,

¬ ý WD•EĚf • C- +±Õ È æ>/ g mF  
- E Ô c , ” \*^P Ü q Õ æ/8 ʘÖ Ä' %Í p3ñ  
5 Ô c , e ð J \ 3 X Õ ) ' ¬ ü WD•EĚf •  
C+±mF - E Ô c , ”&c; Í p!o' - Wæ> %og  
- E Õ È æ> %

"ŽŽœ1 D•EĚf • +±mF - E Ô c ,

BoJ-wDj

f › P Ü q Õ æ/8 "J-wDj a +± C(´ g

$$a = \frac{0}{n\sqrt{\beta - e^0}} [f_r \ f_t \ f_n] \begin{bmatrix} e = \theta \\ \beta + e \dot{u} \theta \\ ! \end{bmatrix} \% \text{ o}$$

< Z "n g t DýÕ>ýELÓ "@ĎÄ™< g

$$n = \sqrt{\mu/a} \% \text{ xo}$$

œœU ý W# h "< Z+±D•EĚf • F\* \ -> Ç+±" FÜ

6 Õ È +±æ> ">R- € z # hJ-wDj C(´ - T "

%o < Z 0 W>Fü+±• ..4 É - T "Á ¬ 0 W>

Fü+±f >ÿ- < %@Ď È æ> g u<sub>a</sub> "F ¬ a C-

+±Õ È æ> Á g

$$u_a = \frac{\beta}{\sqrt{\beta + 0 \dot{u} \theta + e^0}} \begin{bmatrix} e = \theta \\ \beta + e \dot{u} \theta \\ ! \end{bmatrix} \% \text{ "o}$$

œœ' u<sub>a</sub> g f J-wDj+±mF - E Ô c , %

0o | ð(´

| ð(´ +± C(´ g

$$e = \frac{\sqrt{\beta - e^0}}{na} [f_r \ f_t \ f_n] \begin{bmatrix} = \theta \\ \dot{u} \theta + \dot{u} E \\ ! \end{bmatrix} \% \text{ o}$$

< Z+±E g | Dp%æÿ" £ † S+±@ĎÄ™< g

$$\dot{u} E = \frac{e + \dot{u} \theta}{\beta + e \dot{u} \theta} \% \text{ ③o}$$

œœ9)3 Ä | ð(´ +±mF - E Ô c , u<sub>e</sub> g

$$u_e = \frac{\beta}{\sqrt{\beta + 0 \dot{u} \theta \dot{u} E + \dot{u} E^0}} \begin{bmatrix} = \theta \\ \dot{u} \theta + \dot{u} E \\ ! \end{bmatrix} \% \text{ o}$$

%o

œœ oD•EĚk >ÿ

D•EĚk >ÿ C(´ g

$$\alpha_i = \frac{r}{na^0 \sqrt{\beta - e^0}} [f_r \ f_t \ f_n] \begin{bmatrix} ! \\ ! \\ \dot{u} \theta + \theta o \end{bmatrix} \% \text{ o}$$

œœD•EĚk >ÿ+±mF - E Ô c , u<sub>i</sub> g

$$u_i = \begin{bmatrix} ! \\ ! \\ k_i \dot{u} \theta + \theta o \end{bmatrix} \% \text{ ! o}$$

"ŽŽœ1 p3ñ5 Ô c ,

f › zL• Õ ) +±mF - E Ô c , "Í p3ñ5 Ô

c , u<sup>M</sup> =•.g g

$$u^M = \frac{W_a \%_{o_i} - a \alpha_a + W_e \%_{o_i} - e \alpha_e + W_i \%_{o_i} - i \alpha_i}{| W_a \%_{o_i} - a \alpha_a + W_e \%_{o_i} - e \alpha_e + W_i \%_{o_i} - i \alpha_i |} \% \text{ ③o}$$

< Z "W<sub>a</sub> "W<sub>e</sub> "W<sub>i</sub> \ e i "=•.g 1 D•EĚf • +±pFú"

f › L->œ=yx ŌA0j "œ \*U( E0Ä" @ĎÄ+

8 4 |=.g L H3đi %u<sup>M</sup>=•.g+± g € z # h - E

Õ È æ> "4 5 WK 3 - E 4 > " u = u<sup>M</sup> %Í

p3ñ5 Ô c , ' » úNµ±%\*U"lo' ü - # h+±-

E Õ È æ> "x 6 @ĎÄELÓ &ëÓP +±E%æ%

@ë 4 i n@Ä 3 X g e<sub>a</sub> "e<sub>e</sub> "e<sub>i</sub> "• i ; x €

( Ĩ 6 %\*U8 4 w<sub>kt</sub>•.g, 4 i "€ J ø'ä . 1 e

i pFüt -> Ç # " a<sub>i</sub> = a<sub>w<sub>kt</sub></sub> "e<sub>i</sub> = e<sub>w<sub>kt</sub></sub> "i<sub>i</sub> = i<sub>w<sub>kt</sub></sub> ' "

%o <-> Ç € z # h+±u<sup>M</sup> "3 u = u<sup>M</sup> ' ] %! o

< Z!o' n "° EĎô%o <lo' f<sub>s</sub> "4 5 %o <lo'

q Ō Í ELÓf<sub>p</sub> "3 f<sub>p</sub> UD•EĚ) 42( Z 3? ; ' q

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i n@Ä 80! ² # +±t g t<sub>i</sub> " ' t<sub>i</sub> \ - W->

Ç i %

ŽĪ 3 â Ô c 0f\*’

¬ \*UÍ p3ñ5 Ô c , 6 u ] 3D•EĚf • Ô

c ] , 4 i "59 Ô c , 4 : \ D•EĚf • "E 6 KzÑ

%ϕ æ# " H<sub>d</sub>%<sub>q</sub>o=H<sub>d</sub>%<sub>q</sub>o"¬ \*U, 3Ü+±Í p3ñ5

Ô c , " \$ Bâ@o "m U' ' -m7 ý ' - .ú 3

â Ô c 0f\*’ ' Ô c H<sub>d</sub>%<sub>q</sub>o%

WK 3 Õ È T <¹ æ>; , . >ÿ6 "a ¹ i µ

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,%& » J øD•EĚ, 4D•EĚ+±a ¹ i t Ë T ³ " ¬

CD° +±D•EĚf • u4! . - â #K! µ "x ; ° 1

- D•EĚf • - BxÔ c 7 , 4 i %o+±• FÜ3ŌD° < "

: ‡ 3 â Ô c o%EĎÄ0j µ +±i , %Á f

Ω +± t C(´ "3 £A0j 7 Ω<sup>M</sup> %

! D°a 1 i C • Ê › gKzÑ%æ# æ# H<sub>d</sub> %  
 H<sub>d</sub> ,! Ò ú M WK` v ; D•E€• f >ÿ" ...U ý Wa \*y  
 H<sub>d</sub> " - Ä M`3 â \$ BàΩ = Ω<sup>M</sup> %H<sub>d</sub> U ! ~ 0x d  
 # "WK` v ; D•E€• f >ÿu (Ý • L C "G Ô`L xW  
 a \*y i "3 X @ë H<sub>d</sub> "H<sub>d0</sub> "H<sub>d</sub> "H<sub>d</sub>x %

H<sub>d</sub> a \*y i ±@ ðÄ J C - 8 â7 - 7` A ! ; € J  
 ø #K! D•E€• • 1 e i pFú Ç # " - \*U í p3ñ  
 5 Ô c , "t<sub>i</sub> \ - ) Ç ± ± % Ý 3 H<sub>d</sub> % q o @ë F ü " - \*U  
 • i @ ðÄ æ " . #K! 3 g ! !! " !! Ò " !!"  
 B o !! Ò " B o !! " B o !! " B o !! " 0x !! Ò x Wg  
 K! " ü Wg K! 2 H<sub>d</sub> % q o ý Wi " a<sub>i</sub> = a<sub>wtb</sub> " e<sub>i</sub> =  
 e<sub>wtb</sub> " i<sub>i</sub> = i<sub>wtb</sub> " ' % B o < l o ' u<sup>M</sup> " 3 u = u<sup>M</sup> ' ]  
 % B o < Z l o ' n " 4 5 % o o < 1 % o o < l o ' q Ò Í  
 ELÓ f<sub>p</sub> " 3 £ UD•E€} 4 2 ( Z 3 ? ; ' q Ò æ / 8  
 % o o E = y / 3 " 3ü D æ € a " e " i t ] D è 4 i n @ â  
 A 80! 2 # - > Ç t<sub>i</sub> " # ± ± H<sub>d</sub> % q o ; J i ! D° 8  
 : , % v F \*U 1 3 " U g K! Z - W H<sub>d</sub> % q o E = y  
 @ ðÄ " E € æ , ! 7 \$ Bà H<sub>d</sub> % q o = H<sub>d</sub> % q o " ! o '  
 x Wa \*y i " & Á ± ± Ô c #K! 3 X g t<sub>iB</sub> " t<sub>i0</sub> " t<sub>i</sub> " t<sub>iX</sub> %

@ë! !! j H<sub>d</sub>B < H<sub>d0</sub> < H<sub>d</sub> < H<sub>d</sub>x j 0x !! " 3  
 â Ô c 0f \* - 8 â

B o H<sub>d</sub> % q o = H<sub>d</sub>B " H<sub>d0</sub> " H<sub>d</sub> " H<sub>d</sub>x #

$$a_i = a_{wtb}$$

$$e_i = e_{wtb}$$

$$i_i = i_{wtb}$$

%00o

ææ 0o H<sub>d</sub> % q o U ! !! " H<sub>d</sub>B o C % B<sub>d0</sub> " H<sub>d</sub> o C % B<sub>d</sub>x " #  
 0x !! Ò g K! 2 #

$$a_i = \begin{cases} a_i " t j \mu \\ a_{wtb} " t > \mu \end{cases}$$

$$e_i = e_{wtb}$$

$$i_i = i_{wtb}$$

%0 o

ææ o H<sub>d</sub> % q o U % B<sub>d</sub>B " H<sub>d0</sub> o C % B<sub>d</sub> " H<sub>d</sub>x o g K! 2 #

$$a_i = a_{wtb}$$

$$e_i = e_{wtb}$$

$$i_i = \begin{cases} i_i " t j \mu \\ i_{wtb} " t > \mu \end{cases}$$

%0 x o

ææ E6 Ç J ø D•E€; " f › H<sub>d</sub> % q o E6 3 â Ô c 0f  
 \*' % ' # D•E€g Ô #K! t<sub>i</sub> ; u<sup>M</sup> 6 " 59 u<sup>M</sup> Z ± ±  
 a<sub>i</sub> " e<sub>i</sub> " i<sub>i</sub> à » 3 â Ô c ± ± μ % • ? - x " " # t<sub>i</sub> \ μ  
 ± ± \* • " ^ μ \ - - > Ç %

t Ñ % æ 3ü t C ( = • g g

$$\bar{\Omega} = \frac{\Omega \% q o - \Omega \% q o}{t_i - t_i} \% o$$

ææ E € ð ; z L • 1 " i ± ± • i @ ðÄ æ " ! o ' μ ã Ñ U  
 E6 1 3 " g K! " @ è = B " 0 " " x " F g K! E6 g ! "  
 t<sub>h</sub> Ò t<sub>h</sub> g C . è H<sub>d</sub> % q o - D p ± ± a \*y i m & Á ± ± Ô c  
 #K! % C . è H<sub>d</sub> % q o - D p ± ± a \*y i g H<sub>d</sub>B " F n  
 B o " μ U ! " t<sub>ju</sub> Ò 2 ý Wi " - \*U % 00 o 7 % 0 x o <  
 Z , % Á ± ± Ô c 0f \* " ' % B o < Z l o ' í p 3ñ 5 Ô  
 c , u<sup>M</sup> " 3 u = u<sup>M</sup> ' ] % B o < Z l o ' n " 4 5  
 % o o < 1 % o o < l o ' q Ò Í ELÓ f<sub>p</sub> " 3 £ UD•E€} 4  
 2 ( Z 3 ? ; ' q Ò æ / 8 % o o E = y / 3 " 3ü D æ  
 € a " e " i t ] D è 4 i n @ â 80! 2 # - > Ç t<sub>i</sub> " 3  
 Ω % q o ' % B o < Z l o ' Ò " 8 : 0v » Ω<sup>M</sup> F \*U 1 3  
 " U g K! Z - W μ E = y @ ðÄ " E € ð G NE , !  
 7 \$ Bà Ò = Ω<sup>M</sup> " ! o ' \$ Bà Kz Ñ % æ # :  
 ± ± μ %

3 â Ô c ± ± a 1 U » a 1 i ± ± C £ : 5S5 " &  
 » CD° ± ± f • " . - â #K! ° C " & h g Ò  
 #K! £ : G 6 μ T ž ú %

ä† , , L 3 ½

äž† x € ( í , , L

, z ± ± - \ ! a " E : 6 \* 3 WK` 3 † Ä μ T "  
 È Kr p 1 = Ì ± ± WK` 3 7W • Z - T ± ± \ Y ± ±  
 ó ö • i " L • / g B ] % WK` 3 ± ± Ò È à » L •  
 / " < WK` 3 6 \* 1 = ± ± ( í 6 K } %

Y ' , ± ± \ - A / £ WK` 3 Ò E Û 3 à ~ L ± ± D • E € g  
 Ò 6 \* È " 4 5 , z - \ ! a " F ô \* U WK` 3 L • /  
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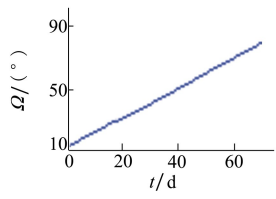
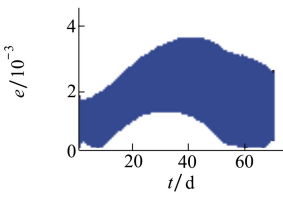
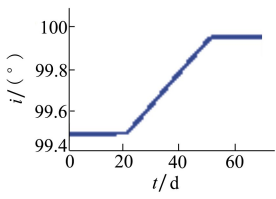
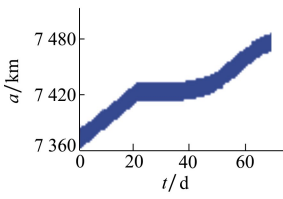
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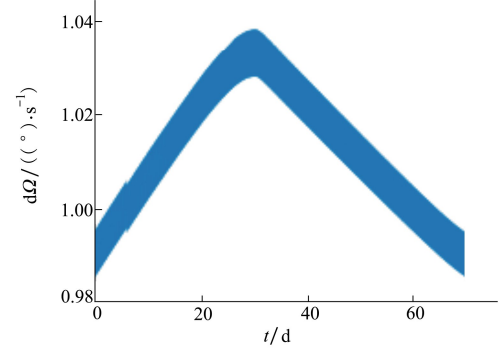
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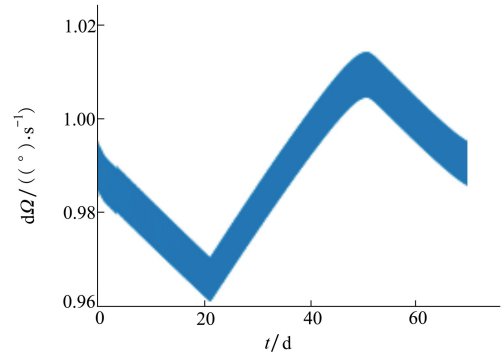
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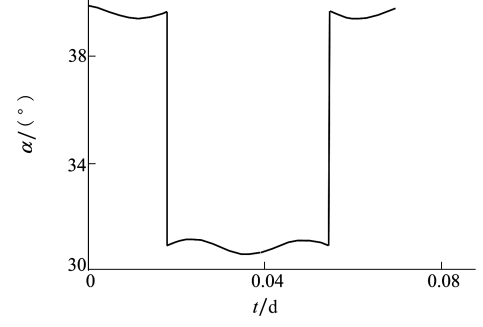
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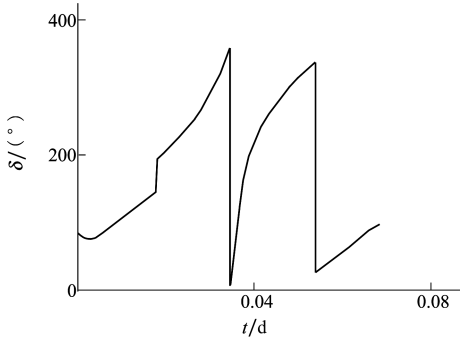
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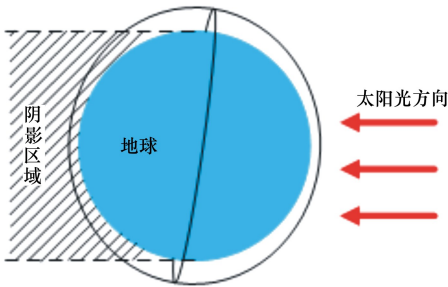




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