

JYSçãÑÑ s ys-vÑD yÓ ÓÑŷ SéÑ# #ú/ÇáÇ# î

' » - ('æA~ N1÷4) 5 C .è "x Ó+± à 0f æ" -A/£

EB•^ßw P^ßwa^{1 0}

%æž È7WŠ T " " ž I & œ0 x!!!+0Ž K_T " 5• 5 %0E " K•" D Û œß! ß 0o

...œ@Áµ &(Ý 6 - ('æA~ N1÷C .è "x Ó...U+±@o p2MW• - 7! 1 MŠ¼Fú ç0v4gKwý ' 3 ' » -
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.è • T N1÷T 1 - 7! T x.ú! @w£ ' » ' Ç v 3 Ý+±4) 5 C .è "x Ó EGD' » ÖÇX+±@ð æ
" & mýC .è "x ÓE =yO'@iŷ, ,L È , 1 &! 3 ½O'@i³ mýC .è "x Ó 1 @ð æ" +±6 u T 1 5
)3 T

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œœè 0f \ - W' » à 0f52@Ñ &| a û G Wæu
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0f)3 @ç , +±Fú@R² æ%
; U d^{ß0} » ß " j NÄN ý ' N1÷Kó+±- " "EG
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1÷• DèK MÅK¼; " •œJ⁰⁰ õ ý 'æA~ N1÷Kó+±-
" " ° n@Kã< Ó \ GW: 9+±i "s'æA~ N1÷
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ã+±| a œ=•Dè' ' %
g 3 R= 7 E 4gKw^ 1 03 - (œÁ*U]
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õ EGDôü ^ - (œL->@ß Bã+±Ž # " f E 3
ê@èi +±Ç v %Ä+÷ > & - (œ+±6 u Á*U"
÷ 1 +±+ " =•(Ý • < "ê@èi Ä] 3 " 52+±-"
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6=ç w=ç DýOÄ+±Kó=0Ä } 0 ÷ E u p Kó=0Ä } 0
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*Uz œ"; d•ü0v œý ' 3 M±L - 7! T 4 4 *U » @ñ
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' » - ('æA~ N1÷| | a 2(+±Í T - 7! T 1 @U K
>•ç!C .è "ý ' 3 ' /ø 4Ñ€² F ž @é±0Ä" " £ A
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ý ' 3 .ú à 0f æ" ' ? à G < T à 0fK MÅ%'
C ",% " 52 U - ('æA~ N1÷5†1" æ" ß0 &g K! -
('æA~ N1÷Kó ß0 ÷ - (& £æA~ N1÷Kó ß0 vM³
œ† 3 ,% -A/£ " g - ('æA~ N1÷ à 0f)3 @ç 3
Fú@= ' r %

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0fK MÅNÄN Ç v 3 - ('æA~ N1÷• %œœ &L=ŷf
d =Uçwü f] çwê@è6 o+±lv ; C .è +i ü0v ß0
-A/£ 3 ' » C .è +± ê@èi &ã"x Ó " £ ý ' 3 M4 +±
lv ; C .è ; T < C .è +æÝ0v ß0 õ U ' ' -m7 ý '
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=y³ • " @i; %

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>ñ , %Ý 6 C .è "x Ó+±K MÅh >@€(Ý U WæL• á

- \ p2MW• : 9 # "L->ⓂⓂô- Ç+±ñFE =y #
 = ' i "E (E) 7! ³ A ++B ' +! \ ê@è6+±p2M
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 &Kä< Ó 1 - (' Q52+±50;~D°g0- , "ò \ & £ E
 =y ý .ú3ñ5 ' /ø Q52 x K!+±5•2(% , È 7 " - ('
 'æA~ N1÷C .è"x Ó+±Ç v >Ⓜ! g : o "L->Ⓜ0;~+±
 2M! G %

g ³ ? à(Ý 6 - ('æA~ N1÷C .è"x Ó+±: Bà"
 Y ' Ç v ³ 5±KóT &è • T &N1÷T 1 - 7! T x.ú'!
 Ⓜ"£ ' »E x.ú'! Ⓜý ' - .ú Ý+±4) 5'! ⓂC .è
 "x Ó"µª] x : ³ M4 C .è"x Ó+±MŞ¼Fú ç 1 Kā
 < ÓW• >Ⓜo0vK} c Ž # %

Y ' NÄu ø3ú³ ê@èi+±' Y - " "EⓂⓂô3 ½
 (Ý 6 - ('æA~ N1÷! D°" F+±: Bà"4 ' - .ú! g
 1 ±+± D°" F "x ; 3 ½³ € z +±- ('æA~ N1÷
 C .è"x Ó+±4gKª"£ ý ' ³ Ý+±4) 5 C .è"x Ó"&c;
 4 ' ³ &â p " ++< T p Fú-> Ç æ" ÷ ' »
 ÖÇX+±G < T à0f æ" " - ; EⓂⓂô , L È , 3
 ½"O!@i³ Y ' æ" +±5)3 T 1 6 u T %

Ö† - ('æA~ N1÷Kó

Y70->Ⓜø3ú ê@èi+±' Y - " %

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 v gKó5 X] gK! ! "ßÒ7+±- W- (' 3 0 * • M
 1 "£ • " =Dè< g

$$H = x f_x "h_x \mathbb{R}_x \text{ oí} |x \hat{a} X W \quad \% \mathbb{B} o$$

< Z àh %o=•.g x < » ý Kó5 E +±Kā< ÓKó5 "
 i g ! "ßÒ7+±} KóP_x g h %o Z p2M& Á+±- ('
 ? F÷"9 d g ! "ßÒ7+±} Kóh_x %o g ê@è6"0-
 Æg h %o"£ • " =Dè< g

h %o = xγ^λ |P^λ "λ = ß"0"- " |h %o | W %o
 < Z à |h %o | =•.g h %o Z p2M±• Fú-Kā< Ó γ^λ
 =•.g x â X < » ê@èi H +± 6* T P^λ =•.g γ^λ & Á
 +±- ("A\$ Bà Ⓜ^{|h %o |} P^λ j ß%

#‡ - ('æA~ N1÷! D°" F

Y7 h>Ⓜ3 ½(Ý 6 - ('æA~ N1÷! D°" F+±:
 Bà"£4 ' - .ú! g 1 ±+± D°" F %
 #Ž† M4 - ('æA~ N1÷! D°" F
 Ç v #æ4 Ç (< ê@è6 h %o = xγ^λ |P^λ "λ =

ß"0"- " |h %o | W £ Ä 3 * • ß° Ç v g

$$E \%o = \left(\mathbb{R} \right)_{\lambda = \beta} \gamma^\lambda P^\lambda \quad \%o 0$$

U Ä 3 * • ' -m7 "è • * • ß° Ç v g

$$D \%o = \left(\mathbb{R} \right)_{\lambda = \beta} \%o^\lambda - E \%o o^0 P^\lambda \quad \%xo 0$$

ææF & » (< 0 W ê@è6 h_ß¹ h_0" M4 ! D°" F
 üE - 8 á

$$\beta_0 - \acute{E} E \%_{\beta_0} o > E \%_{\beta_0} o" F h_{\beta_0} > h_0 +$$

$$0_0 - \acute{E} E \%_{\beta_0} o = E \%_{\beta_0} o" F E - ' ! D^\circ . \acute{e} \bullet$$

* • á

$$- \acute{E} D \%_{\beta_0} o > D \%_{\beta_0} o" F h_{\beta_0} < h_0 +$$

$$- \acute{E} D \%_{\beta_0} o = D \%_{\beta_0} o" F h_{\beta_0} = h_0 %$$

&ç597E - ('æA~ N1÷! D°" F ...U - Ç+±m

K} "€ Q ê@è6+±Ä 3 * • ; .è • * • F*,%0v # "i

" & £ E =y! D°"EⓂⓂô, ßE =yA! ; %

, Óæ50;~ - 0- , +±ò â "4 Ç Q ê@è6

$$\alpha h_{\beta} = \left\{ ! \cdot 0 \frac{\beta}{!} " ! \cdot \left| \frac{\beta}{!} " ! \cdot \times \frac{\beta}{!} \right. \right\}$$

$$\alpha h_0 = \left\{ ! \cdot - \frac{\sqrt{!}}{!} \left| \frac{\beta}{!} " ! \cdot - \frac{\sqrt{!}}{!} \left| \frac{\beta}{!} " ! \cdot + \frac{\sqrt{!}}{\beta} \left| \frac{\beta}{!} \right. \right. \right\}$$

@ÐÄ£ Ä 3 * • 1 .è • * • 3 X g

$$E \%_{\beta_0} o = E \%_{\beta_0} o = ! \cdot " D \%_{\beta_0} o = D \%_{\beta_0} o = \frac{! \cdot ! 0}{!}$$

' # "f > 7E ! D°" FE =y! D°" G Ä] h_ß = h_0
 +±4 @ç'k &c: 5)3 %

7E 3 ½=• ; "ò f > Ä 3 * • 1 .è • * • £

: 6* µª] ? à ê@è6+± D°K MÄ " ' L->Ⓜ&(Ý
 6+± D°" FE =yf E %

#Ž† f E - ('æA~ N1÷! D°" F

ËKr 7 "ê@è6 ZKā< Ó YCØ X@Ñ æ"€
 Kā< Óg ! Ž # "ⓂŃ £ N1÷1 : -> Ç T - T " ' "

"à0f52 & æu - : -> Ç +€Kā< Ó! X < C! X
 T # "à0f52 & æu+±Q àF* µ-> Ç % ' f

> Kā< Ó ; ! Ž +± ÒDp8 Ó ' Ç v Kā< Ó+±N1÷
 Ó"3 £3à' Ý+± D°" F %

Ç v úæ4 Ç (< ê@è6 h %o = xγ^λ |P^λ "λ =

ß"0"- " |h %o | W F Kā< Ó γ^λ +±N1÷ Ó Ç v g
 f %o = ß- 0 |γ^λ - ! " | %o 0

» \ Ä] h %o Z • F Kā< Ó+±N1÷ Ó "ËKr
 7 i Ä] ³ - WÝ+± ê@è6 h %o

h %o = xγ^λ |P^λ "λ = ß"0"- " |h %o | W %o 0

æææ@Ä] " ê@è6 h %o Z +±Kā< Ó g h %o Z

& ÁKã< Ó±±N1÷ Ó % 3 X Ç v h %o±±Ä 3 * •
1 .è • • •

$$E \%o = \int_{\lambda = B}^{h \%d} \mathbb{R} f \%^\lambda dP^\lambda \quad \%B$$

$$D \%o = \int_{\lambda = B}^{h \%d} \mathbb{R} \%o \%^\lambda o - E \%o o^0 P^\lambda \quad \%o$$

ææf > N1÷ Ó Ç v - "h %B o Z γ^ ±±N1÷ ÓB.
T "F γ^ üE ±± æB : -> Ç " ' # & Á±± ê@è6
ÁA B < "E ; Ì > Ì @Ñ ,%0S% ' U Ä 3 *
• &è • * • ±±' -m7 "KqÍ N1÷ Ó±± - " " Ç v Ý
±± D° F "4 Ç (< 0W ê@è6 h_B 1 h_o "£ N1÷
Ó & Á±± ê@è6 g h %B o 1 h %B o "F Ý±± D° F
üE g â

$$B_o - \acute{E} E \%B_o > E \%B_o "F h_B > h_o +$$

$$0_o - \acute{E} E \%B_o = E \%B_o "F E - ' ! D^\circ .è •$$

* • â
- \acute{E} D \%B_o > D \%B_o "F h_B < h_o +
- \acute{E} D \%B_o = D \%B_o "E - ' ! D^\circ N1÷ Ó±± Ä 3

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o - \acute{E} E \%B_o > E \%B_o "F h_B < h_o +
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* • â
x_o - \acute{E} D \%B_o > D \%B_o "F h_B > h_o +
- \acute{E} D \%B_o = D \%B_o "F h_B = h_o %

ú† - ('æA~ N1÷C .è"x Ó

ú Ó† M4 - ('æA~ N1÷C .è"x Ó

$$\text{Ç v } \frac{1}{2} \text{æ@Yê @è6 h}_B \text{"h}_o \text{"d \%B}_B \text{"h}_o \text{ o g h}_B \text{"h}_o \text{ x}$$

K!±±C .è"x Ó "L->Bà 8 TM3 T Ž # Bxô â

$$B_o L < B L T \hat{a} \%B_o \text{"h}_o \text{ o } ! +$$

$$0_o \tilde{N} \bullet T \hat{a} \%B_o \text{"h}_o \text{ o} = d \%B_o \text{"h}_B \text{ o} +$$

$$o \acute{u} C \text{Ø} \hat{a} \%B_o \text{"h}_o \text{ o} = ! A h_B = h_o %$$

$$9 \# "f > ' ([BxK" \acute{O} - " \acute{e} @è6 K! C .è @ \acute{I}$$

0Ä±±z ý \ p2MW • ,%0v "€ : \$ BâE - z ý # "L-

>EÖô- Ç x â & p2MW • D° > ±± ê@è6 E =y -

r " - f > ý .ú M&K -> ñ F F ú : # (Í Kã< Ó - T C52

Kã< Ó - < ±±p2M" £ £ - (' g ! "E C E \ T F 3

' ([Fô*U±±æ" B %o

$$\text{Ç v } B_o \text{æ4 Ç (< Q \acute{e} @è6 h}_B \%p_o \text{ \textcircled{e} x y}_B^\lambda | P_B^\lambda W$$

1 h_o \%o = x y_o^\lambda | P_o^\lambda W t @æ p2MW • t g l "M4

!v ; %@U] =koC .è Ç v g

$$d_B \%B_B \text{"h}_o \text{ o} = \int_{\lambda = B}^l \mathbb{R} |\gamma_B^\lambda P_B^\lambda - \gamma_o^\lambda P_o^\lambda| \quad \%o$$

ææM4 T < %6üù => UçC .è Ç v g

$$d_o \%B_B \text{"h}_o \text{ o} = \sqrt{\int_{\lambda = B}^l \mathbb{R} \%B_B^\lambda P_B^\lambda - \gamma_o^\lambda P_o^\lambda o^0} \quad \%B o$$

ææÇ v äæ' ([B ÖU 7 E C .è"x Ó±±' -m7 E
=y f E "Ç v 3 - .ú f E ±±v ; C .è

$$d \%B_B \text{"h}_o \text{ o} =$$

$$\frac{B}{0_{\lambda = B}} \int_{\lambda = B}^l \mathbb{R} \%B_B^\lambda P_B^\lambda - \gamma_o^\lambda P_o^\lambda + |\gamma_B^\lambda - \gamma_o^\lambda| P_B^\lambda P_o^\lambda o \%B o$$

ææ%Á±±' f E ±±T < C .è Ç v g

$$d_x \%B_B \text{"h}_o \text{ o} =$$

$$\sqrt{\frac{B}{0_{\lambda = B}} \int_{\lambda = B}^l \mathbb{R} \%B_B^\lambda P_B^\lambda - \gamma_o^\lambda P_o^\lambda o^0 + \%B_B^\lambda - \gamma_o^\lambda o^0 P_B^\lambda P_o^\lambda \acute{O}}$$

ææes 7 0.ú f E ±±C .è"x ÓF* ...U,%94gKα"
>@o ê@è6±±p2MW • ò M',%0v "S F " E/*U"

8 : \$ Bà"ì L->EÖô- Ç æ" E =yp2M±±# ='
• "E C E) 7! 3 ç g A ±±B' % ' "L->E&(Y 6

±± - ('æA~ N1÷C .è"x Ó† ' f E %
úŽ† Ý , - ('æA~ N1÷C .è"x Ó

EÖô3 ½ - "(Y 6 - ('æA~ N1÷C .è"x Ó±±
K} c h>@g 0WæL • â† ì ; C .è @DÄ±± ê@è6 ±±

p2MW • ò M',%0v +æ ê@è6 Z ±±p2M- 6 &"Kã<
Ó T < FúÝ ç D "Kã< Ó,%9±±ò â 8 "6&" - (' i

T < ç D %E 0WŽ # " : ò ç g B ' 3 A "C K}
c 3 C .è"x Ó±±Á*U80! 1 g æ% ' "Y7 EÖô

Ç v Ý±± - ('æA~ N1÷C .è "µK' 7 E K} c Ž # "ú
59Dê] - , C .è"x Ó Á*U80! ±± ±±%

ŽŽæ' » C .è- K b ±± ê@è6 C .è"x Ó
Y7 EÖôB ' C .è- K b ±± E M Y ±± C .è"x Ó "£

Z "C .è- K b Z ±±p2M^ ê@è6 K! ±±Kã< Ó C .è &
± = %

Ç v ' æ@Y_B \text{"h}_o \text{ g (< Q \acute{e} @è6 " Q52 p2MW
• 3 X g | h_B | " | h_o | " F h_B 1 h_o x K! ±±C .è- K b Ç

v g

$$D_{h_B h_o} =$$

$$\begin{bmatrix} d \%B_B^\lambda \gamma_o^\lambda o & d \%B_B^\lambda \gamma_o^0 o & - & d \%B_B^\lambda \gamma_o | h_o | o \\ d \%B_B^0 \gamma_o^\lambda o & d \%B_B^0 \gamma_o^0 o & - & d \%B_B^0 \gamma_o | h_o | o \\ \acute{E} & \acute{E} & & \acute{E} \\ d \%B_B^{|h_B|} \gamma_o^\lambda o & d \%B_B^{|h_B|} \gamma_o^0 o & - & d \%B_B^{|h_B|} \gamma_o | h_o | o \end{bmatrix}$$

< Z "d %_Bⁱ γ₀^j o = • g h_B ZOYi WKā< Ó ; h₀ ZOYj
 WKā< Ó ± C .è & " f > %o o < ± ± J C 3 £ Ç v g
 d %_Bⁱ γ₀^j o = γ_Bⁱ P_Bⁱ - γ₀^j P₀^j %Bxo
 ææF ' » C .è - K b ± C .è " x Ó E Ð Ê K b Z p 2 M
 ± ± t i Ç v " x € = • D è < g

æ l . %_B " h₀ o = $\left| \frac{\beta}{|h_B|^{1/4} |h_0|} \left(\mathbb{R} \mathbb{R} d \%_B^i \gamma_0^j o \right) \right| \%B o$
 ææ 3 ½ %B o < - " i ; C .è @ Ð Ä ± ± è @è 6 ± ±
 p 2 M W • | h_B " | h₀ | : L - > @ % 0 v " p 2 M M § ¼ C E : L -
 > @ K z ¼ ç D % ' " C .è - K b ± B ' µ ^a] ? à ³
 (Ý 6 C .è " x Ó ± ± c 3 Ó Ž # " 1 • * † ³ è @è 6 ± ±
 ø æ " E - z ³ ç g A ± ± B ' %

& c 5 9 " & Ý ± C .è " x Ó L - \$ B à ± 6 > @ M E = y @ î
 ; ; p (Ý " Y 7 ' » C .è - K b ± C .è " x Ó : \$ B à ú
 C Ø T Ž # " E Ð Ê , 0 E = y A ! ; %

, # æ 3 X F ô * U ' ([ß " Ò Z ± ± C .è " x Ó d_B " d₀ " ' ([ß Ò Z ± ± C .è " x Ó d " d_x " ÷ Y 7 ' » C .è
 - K b ± C .è " x Ó d_x " & 8 Ÿ W ¥ , è @è 6 ± ± C .è E
 = y @ Ð Ä " : 9 " x Ó ± ± @ Ð Ä É - • ß m . g %
 = • Ó † : 9 C .è " x Ó @ Ð Ä É

! D° & AŽ	d _B	d ₀	d	d _x	d _•
h _B " h ₀	!	!	!! ß	!! "	!
h _B " h	ß	! @ @	! " "	! " x	!
h _B " h _x	! ß	!!	!! "	!! "	!! !
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= • Z à
 h_B = x ! | ! @ ! 0 ! | W h₀ = x ! @ ! " ! | ! 0 W
 h = x ! | ! 0 " ! @ ! | W h_x = x ! | ! " ! 0 ! | x W
 h_• = x ! | ! " " ! 0 ! | " W h = x ! | ! " ! | ! 0 "
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3 ½ = • ß " Ä ' 8 4 @ ç
 ß o d_B ~ d_x t " Ó F ü h_B ; h K ! ± C .è " A f
 > d . %_B " h o = ! ß @ = • ; Y 7 ' » C .è - K b ± C
 .è " x Ó d . ? à ³ è @è 6 K ! p 2 M W • : 9 Ž # 8 ± ± C
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0 o f > d . %_B " h₀ o = d . %_B " h o " = • ; Ý ± C .è
 " x Ó 8 p 2 M \ S E = y M § ¼ F ú ç & @ Ð Ä É ! 6
 ž ú +

o d . %_B " h₀ o = ! E - ú , = • ; C .è " x Ó d . :
 \$ B à 7 E @ î ; D ð 8 Z ± ± ú C Ø T " ' ú & c ... U - Ç
 ± ± : B à %

3 ü D ð 7 E 3 ½ " Y 7 ' » C .è - K b ± C .è " x Ó

; a & D ° a] ? à ³ (Ý 6 C .è " x Ó ± ± K } c " s ú ... U
 - Ç 4 g K x % 9 # (Ý 6 C .è " x Ó U - Ç / 8 Ó 7 t < »
 t i C .è " = Ž F ü ± \ è @è 6 ± ± F 3 ! ! @ " ' " g ³
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 i • %

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 f > 7 7 - " " » C .è - K b ± C .è " x Ó ò ò
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 Ó " Y 7 Ç v ³ x . ú è @è 6 ! ! @ ð K ó T & è • T & N
 1 ÷ T 1 - 7 ! T " £ ' » 7 x . ú ! ! @ Ç v Ý ± ±
 è @è 6 C .è " x Ó % £ Z " 5 ð K ó T E Ð Ê ' » C .è - K b
 ± ± C .è " x Ó = • @ " .è • T E Ð Ê è • * • = • @ " N 1 ÷ T
 E Ð Ê N 1 ÷ Ó = • @ " - 7 ! T ; p 2 M • F ü 6 %

U ò 5 0 ; ~ è @è 6 p 2 M W • ± ± z ý 8 " p 2 M W •
 B . > " = ; @ ã E = y Q Ú # " > i % @ - 7 ! " : - > Ç
 T B . < % € p 2 M W • g ß # " - 7 ! / 8 Ó - T K ¼ m W
 • È í " - 7 ! T / 8 Ó E # = K z { %

' " 3 è @è 6 h ± ± - 7 ! T Ç v g
 $c \%_B o = \frac{\beta}{|h|} \%B o$

< Z " | h | = • g è @è 6 h Z ± ± p 2 M • F ü %
 f > x . ú è @è 6 ! ! @ 3 X 4 ' x . ú - (' æ A ~ N
 1 ÷ ! ! @ C .è ± ± Ç v %

Ç v ý æ 4 Ç (< Q è @è 6 h_B = x γ_B^λ | P_B^λ W¹
 h₀ = x γ₀^λ | P₀^λ W p 2 M W • 3 X g | h_B " | h₀ " A n @ à
 | h_B | 3 | h₀ | = / 0 " 3 X Ç v h_B " h₀ K ! ± ± 5 ð K ó C .è & è
 • C .è & N 1 ÷ C .è 1 - 7 ! C .è g à
 ß o 5 ð K ó C .è

æ l_K %_B " h₀ o = $\left| \frac{\beta}{|h_B|^{1/4} |h_0|} \left(\mathbb{R} \mathbb{R} d \%_B^i \gamma_0^j o \right) \right| \%B @$
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 æ $\left| \mathbb{R} \%_B^\lambda - E \%_B o o^0 P_B^\lambda - \mathbb{R} \%_0^\lambda - E \%_0 o o^0 P_0^\lambda \right|$
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d , %_B " h₀ o = | E %_B o - E %₀ o | =
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 f %_B o" f %_B o 3 X = • g h_B "h₀ ZKä < Ó & Á ± ± N1 ÷
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' » 7 x.ú'! @C .è " Ç v Ý ± ± ê @è 6 - v
 4) 5'! @C .è g

d %_B "h₀ = xα_g d_g %_B "h₀ o ð + α_d d_d %_B "h₀ o ð +
 αα_f d_f %_B "h₀ o ð + α_c d_c %_B "h₀ o ð W" %B0
 < Z " α_g " α_d " α_f " α_c g x.ú'! @ ± ± p Fú " \$ B à α_g +
 α_d + α_f + α_c = B %

- v 4) 5'! @C .è) 3? g - .ú - v K" < C
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 - v T < C .è %

p (Ý " Y 7 - ' » '! @ i • ± ± 4) 5 C .è x :
 3 ' z - ('æA~ N1 ÷ C .è Z p 2 M W • , % 0 v 1 K z ¼ F ú
 ç ± K } c " £ A 6 € • F '! @ C .è F * 0 v » ! # " z
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U ê @è 6 4) 5'! @C .è ± ± - m 7 " Y 7 - ' » -
 v í p t % H ü ö ð Ä } 4 ' ê @ è i 4) 5'! @C .è
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Ç v î œ 4 Ç @ Ç X = x_B "x₀" - "x_n W X 7 (
 < Q ê @ è i A = x < x_k "h_A %<sub>B_{x_k} o > |x_k â X "k = B" 0"
 - "n W & Á ê @ è 6 3 X g h_A %<sub>B_{x_k} œ = x_{y_A} | P_A "λ = B" - "
 |h_A %<sub>B_{x_k} o | W 1 h_B %<sub>B_{x_k} o = x_{y_B} | P_B "λ = B" - "
 |h_B %<sub>B_{x_k} o | W t @ è X 7 1 p 2 M ± ± p F ú g ω = %_B "
 ω₀" - "ω_n o " F Ç v ê @ è i A " B x K ! ± ± - v í p
 t C .è g</sub></sub></sub></sub></sub>

$$d_{Hü ö} \%B o = \left[\sum_{k=B}^n \omega_k \frac{1}{4} \%b \%b_A \%B_{x_k} o "h_B \%B_{x_k} o o o^\lambda \right]^{\frac{B}{\lambda}}$$

< Z " d %_{B_A} %<sub>B_{x_k} o " h_B %<sub>B_{x_k} o o f > ê @ è 6 4) 5'! @C
 .è @ ð Ä " d_{Hü ö} %_B o f > λ i ± ± : 9 6 G.ú • < á
 8 λ = B" Ä] í p t % ü ö K & U > o C .è</sub></sub>

$$d_{ü ö} \%B o = \sum_{k=B}^n \omega_k \frac{1}{4} d \%b_A \%B_{x_k} o "h_B \%B_{x_k} o o$$

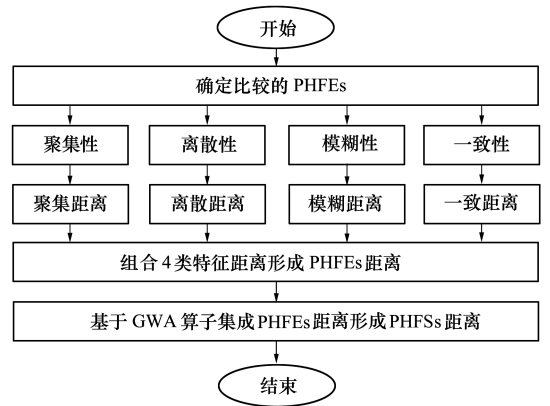
œ œ 8 λ = 0" Ä] í p æ t % ü ö K & U > o
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$$d_{ü Pö} \%B o = \left[\sum_{k=B}^n \omega_k \frac{1}{4} \%b \%b_A \%B_{x_k} o "h_B \%B_{x_k} o o o^0 \right]^0$$

œ œ 8 λ = - B" Ä] í p A 0 1 t % ü ö K & U > o
 C .è

$$d_{ü ö} \%B o = \frac{B}{\sum_{k=B}^n \omega_k} \%B o$$

œ œ ' » 7 " i È (Ý 3 ê @ è i 4) 5'! @C .è ± ± ±
 E M ' £ ' Y " n / 8 - + B m .g %



+ B œ - ('æA~ N1 ÷ 4) 5'! @C .è ± ± E M n / 8

¼ & â p " -> Ç < T p F ú

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t @ 6 m .ú æ u A_i %_B = B" 0" - "m o" ü .ú æ u
 6 n .ú < T C_j %_B = B" 0" - "n o" & Á < T p F ú g ω =
 %_B "ω₀" - "ω_n o " A $\sum_{j=B}^n \omega_j = B$ £ Z æ u A_i U < T
 C_j 7 ± ± i g h_i %_{B_j} o = x_{y_{ij}} | p_{ij} | W p 2 M W • g
 |h_i %_{B_j} o | F Ä] • F æ u ± ± < T i ± ± ± ± à
 0 f - K b H = h_i %_{B_j} o ð_{m x n} % Ç v < T C_j ± ± â g

$$e_j = - \frac{\sum_{i=B}^m f_{ij} \mathcal{L}_{ij}}{\mathcal{J}_n} " i = B" 0" - "m " j = B" 0" - "n \%B o$$

< Z f_{ij} = $\frac{E_{ij}}{\sum_{i=B}^m E_{ij}}$ " E_{ij} = • g ê @ è 6 h_i %_{B_j} o ± ± Ä 3 * • "

*^ %_B o < @ ð Ä Ä] % F < T C_j p F ú ± ± • D è < g

$$\omega_j = \frac{B - e_j}{n - \sum_{j=B}^n e_j} " œ j = B" 0" - "n \%B o$$

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î 'y	a _ß	a ₀	a	a _x	a ₋
x _ß	x! " •! "!"! ®! " W	x! ®! ®! •! 0" ! •! ßW	x! x•! "!"! •! " W	x! " •! "!"! •! x" ! ®! W	x! ®! x"! •! W
x ₀	x! " •! x"! •! W	x! •! ®! ®! W	x! •! "!"! ®! x" ! •! W	x! •! "!"! ®! " W	x! " •! ®! •! 0" ! •! ßW
x	x! " •! 0"! •! " ! ®! " W	x! ®! "!"! •! 0W	x! •! x"! " •! W	x! •! "!"! ®! 0" ! •! W	x! •! "!"! ®! " W
x _x	x! ®! x"! •! xW	x! •! "!"! ®! ß" ! •! xW	x! ®! "!"! •! " ! •! 0W	x! " •! x"! •! W	x! ®! 0"! •! W
x ₋	x! •! "!"! ®! x" ! •! ßW	x! •! x"! ®! W	x! x•! "!"! " •! " W	x! ®! x"! •! xW	x! •! 0"! ®! x" ! •! xW

=• ¼‡ @ã d₀ +±@ř 4 É

î 'y	a _ß	a ₀	a	a _x	a ₋
x _ß	x! •! "!"! ®! " ! •! 0W	x! •! x"! ®! xW	x! ®! "!"! •! xW	x! " •! x"! ®! 0" ! ®! xW	x! •! 0"! ®! W
x ₀	x! •! "!"! ®! W	x! " •! "!"! •! x" ! ®! W	x! " •! "!"! •! ®W	x! •! "!"! •! 0W	x! " " •! x"! •! " ! " •! W
x	x! " •! "!"! •! ®W	x! " •! "!"! ®! " W	x! •! "!"! ®! " ! •! 0W	x! •! 0"! ®! x" ! •! xW	x! ®! x"! •! xW
x _x	x! " •! "!"! •! x" ! ®! W	x! " •! "!"! •! " ! ®! xW	x! ®! 0"! •! W	x! •! x"! ®! W	x! ®! "!"! •! xW
x ₋	x! ®! "!"! •! " W	x! •! "!"! ®! xW	x! " •! 0"! •! x" ! ®! xW	x! ®! "!"! •! 0W	x! •! "!"! ®! ®W

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x _x	x! " •! ! "!"! •! ! " ! ®! 00"! •! " ! " •! ß0"! •! ! W	x! " •! ! "!"! •! 0 " ! ®! "!"! •! 0xW	x! •! ß "!"! ®! " ! •! "!"! •! ! W	x! " •! "!"! •! " 0" ! ®! ß0W	x! ®! x "!"! •! xxW
x ₋	x! •! 0"! " •! 0" ! ®! 0 "!"! ®! 0" ! •! ßxW	x! " •! 0"! •! x " ! ®! 0W	x! x•! 0"! " •! 0x" ! •! ! "!"! ®! 0" ! •! 0 W	x! " •! ß0"! •! ß0" ! ®! x "!"! •! 0W	x! •! ßx"! ®! " ! •! 0x"! •! ß W

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=• ä† Ä 3 * • - Kb

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x _ß	! "	! ß	! " x	! "0x	! @x
x ₀	! "x	! "@	! x	! "	!
x	! @!	! "0!	! " x	! x!	! x
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h₀%_ß0= x! "!" "!" | ! "x"! @ ! ! W

æœF f > Ý++ D° F

E %_ß%_ß00= ! " "E %₀%_ß00= ! "x

6 h_ß%_ß0 > h₀%_ß0" F Φ_{ß0} = d %_ß%_ß0" h₀%_ß00%

3 X@DÄÄ] d_k = ! ! ß@ "d , = ! ! ! " "d_i =

! ßx" d_ü = ! ! %

F 6

Φ_{ß0} = ! x d_k + ! 0x d , +

æ! 0x d_i + ! 0x d_ü = ! ! "

æœFú: 7E Dð8 "3 X@DÄÄ] 1 < T 8++ D°

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$$\Phi_{\beta} = \begin{bmatrix} ! & !!"x & - !!"x & - !!" & - !!" \\ - !!"x & ! & - ! ß! & - ! ß @ & - !!" @ \\ !!"x & ! ß! & ! & !!" ß & !!"0! \\ !!" & ! ß @ & - !!" ß & ! & - !!"! \\ !!" & !!" @ & - !!"0! & !!"! & ! \end{bmatrix}$$

$$\Phi_0 = \begin{bmatrix} ! & !!"x0 & !!" ß & - !!"x & !!"@ \\ - !!"x0 & ! & !!" " & - !!"! & - !!"x \\ - !!" ß & - !!" " & ! & - !!" " & - !!" ß \\ !!"x & !!"! & !!" " & ! & !!"@ \\ - !!"@ & !!"x & !!" ß & - !!"@ & ! \end{bmatrix}$$

$$\Phi = \begin{bmatrix} ! & - !!" ß0 & !!"0 & - !!"x@ & - !!"0 \\ !!" ß0 & ! & !!" ß & - !!" & !!" " \\ - !!"0 & - !!" ß & ! & - ! ß! & - !!"0 \\ !!"x@ & !!" & ! ß! & ! & !!"@ \\ !!"0 & - !!" " & !!"0 & - !!"@ & ! \end{bmatrix}$$

$$\Phi_x = \begin{bmatrix} ! & - ! ß! & - !!" & - ! ßß & - !!" \\ ! ß! & ! & - !!"x & !!" & - !!"x \\ !!" & !!"x & ! & !!" & !!"0 \\ ! ßß & - !!" & - !!" " & ! & - !!" " \\ !!" & !!"x & - !!"0 & !!" " & ! \end{bmatrix}$$

$$\Phi_* = \begin{bmatrix} ! & ! ß0 & !!"0" & !!"0 & !!" \\ - ! ß0 & ! & - !!" & - ! 0ß" & - !!"x \\ - !!"0" & !!" & ! & - ! ßß@ & - !!"@ \\ - !!"0 & ! 0ß" & ! ßß@ & ! & ! ß0ß \\ - !!" & !!"x & !!"@ & - ! ß0ß & ! \end{bmatrix}$$

æœf > %o<@DÄÄ] 4) 5! D° Kb g

$$\Phi_{\dot{u}\dot{o}} = \begin{bmatrix} ! & !!" & - !!"0 & - !!" " & - !!" ß@ \\ - !!" & ! & - !!" ß & - !!" & - !!"0 \\ !!"0 & !!" ß & ! & - !!" & - !!" ß \\ !!" " & !!" & !!" & ! & !!" ß \\ !!"@ & !!"0 & !!" ß & - !!" ß & ! \end{bmatrix}$$

æœ' ON#æ@DÄ1 î'y! a D°++• m! D°i η_i %

η_ß = ! ß@ "η₀ = ! "η = ! @ "η_x = ß "η_{*} = ! "@

æœ' ON#æf > • m! D°i E=y ç ¼" Ä]

x_x > x_{*} > x > x_ß > x₀

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u T %

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Y7 3 X &4) 5! @C .è++! @ ï • pFú&•

E- æ^ ï • ÷C .èKó= ï • E=y | L T 3 ½%

žžœ! @ ï • pFú | L T

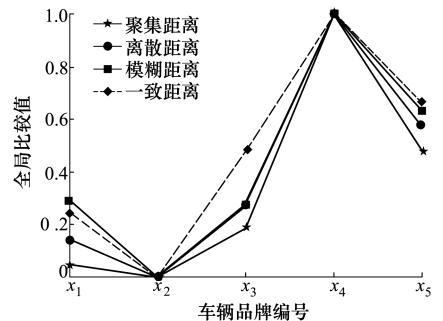
g O¹@îY ' 4) 5C .è"x Ó++6 u T¹ • L• T "

&C .è"x Ó++! @ ï • pFúE=y | L T 3 ½" 3 X

Ê N@> x.ú! @ ï • pFúg !žž£ †! @ pFút

g !žž" & • m! D°i E=y|o? "Ä] ++&! 4 É -

+ 0mg %



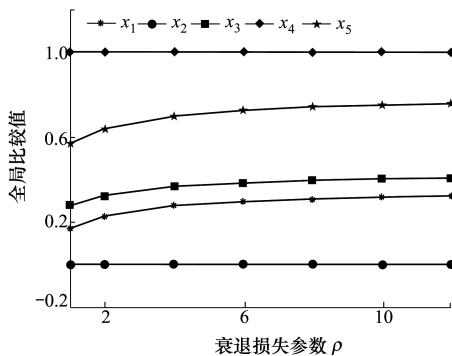
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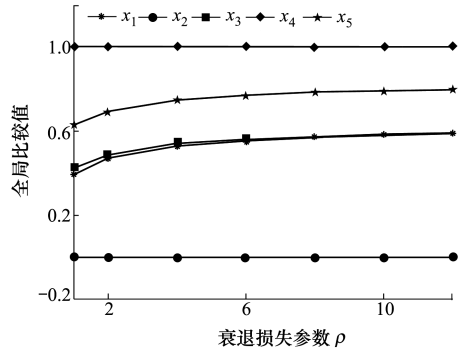
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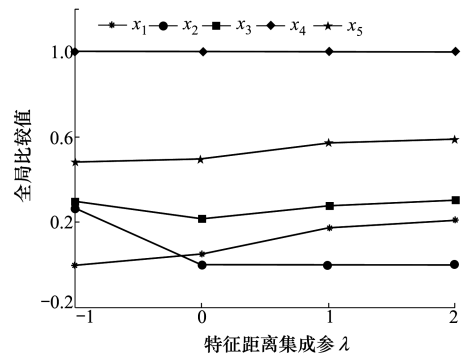
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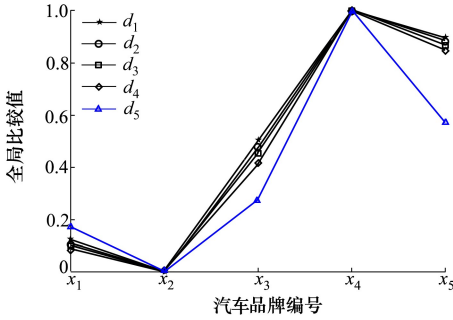
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9±±Q à4 É %

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g³ O¹@iY´ f E C.è"x Ó±±EB· T "Fô*U Ž 7 Z±±Ë, "3 XFô*U(Ý 6 C.è"x Ó"´ ([ß" Ò Z±±d_B"d₀"´ ([ß ÒZ±±d "d_xE=y, ,L ËO¹"& £ ç ¼4 ÉE=y&! 3 ½", ,L4 É⁻ + mg %



+ œ: 9C.è"x Ó8±±• m! D°i

3 ½7 + - ".ú"x Ó±±ç ¼4 É - 7! "t g x_x S x_x S x_B S x₀"s 3 ½1 î'y ±±• m! D°i p(Ý "K' x₀; x_x±±• m! D°i ,%9 C"d_B ~ d_x ±±@ÐÄ É; Y´ C.è"x Ó4 É 6; k X % - Y´ "x Ó8 x_x±±• m! D°i g !."@59d_B ~ d_x±±@ÐÄ É F! g ÒDp"5†KóU !. "KqDp"x_B; x æ6 1"i ±±ò â %

3 ½ì - "d_B ~ d_x UC.è @ÐÄ# "€ ê@è6 p2MW• : 0v# "Fô*UMK>ñFE=y-r "f 3• >±±ì ø œ"û59B' ³ ç gA "59Y´ f E C.è"x ÓE@ðç v : 9±±! @C.è"µ^a]? à³ E - K MÄ - Ä - 3ô±±@ÐÄ É; (Ý 6"x Ó6; k : 9"€(Ý³ Y´ f E "x Ó±±EB· T %

Ž Žœ; £ æ" &! 3 ½

g³ A!; Y´ æ" ±±6 u T "3 X; ´ ([xÒ 1´ ([00Æ=y&! %£ Z"´ ([xÖy*U⁻ ('æ A~N1÷í p t OÄ} %ê@èü öo"9 # V*U ê@è6 Ä 3 * • E=y! D° 3 ½" < T p Fú g %bŽ"!Ž"!Ž"!Ž"!Ž"+´ ([00Ò3 XFô*U .ú : 9±±&/ Ñ ö &â¹ h'æA~ÓE=y à 0f 3 ½"Fô*U' ».è - T C 1 - v &/ Ñ ö&â±±N, !o? < T p Fú%3 7 E æ " ; Y´ OÄ" ±±@ÐÄ ÉE=y! D°" - =• @m.g % *^=• @ - "Y´ æ" ; £ ´ ([±±ç ¼4 É;ª &c ...UF 3 / "s & x_x¹ x_x±±à 0f4 É - 7!" F* 3 x_x Qg ¶ • T - P ±±î'y %59U - !ª D"î'y ±±E 7"´ ([00ÒZ±± .ú æ" t . x Qç g -

E6 "59Y´ ±±à 0f æ" Q Ç x₀ g - !ª D"î 'y "E \ *^ »´ ([00Ò±0S\$C.è h>@ \ E@è-ZFü ê@è6±± œ: -> Ç ÓE=y@ÐÄ",%! Y´ ±±4) 5 C.è"x Ó"£!Í 64) 550;~ p2MZ; j X±±£ œ" & ê@è6 œ±±• @: L ó -> % =• '† : 9 æ" 4 É! D°

´ ([æ"	ç ¼4 É
xÒ	ê@èü ö	x _x S x _x S x _B S x ₀
	I _B "Ö _B ^p	x _x S x _x S x ₀ S x _B S x
00Ò	I ₀ "Ö ₀ ^p	x _x S x _x S x _B S x ₀ S x
	I"Ö _B ^p	x _x S x _x S x ₀ S x _B S x
Y´ OÄ"		x _x S x _x S x S x _B S x ₀

L->@A!; ±±\ "´ ([00Fô*U' ».è - T C 1 - v &/ Ñ ö&â±±N, !o? < T p Fú# " ; Y´ ±±< T p Fú: 9"ÈA(52î 50%

E@è6Y7±±, ,L 3 ½"Y´ ±±à 0f æ" ¼ 6 8 E î â† Y´ ±±4) 5"! @C.è"x ÓU ê@è6 p2M W• : 0v¹ : †M\$¼Fú ç ±±ò â 8 "t E=yC .è @ÐÄ",% M4 C.è"x Ó"E-z ³ 1.ú ú,! >öYAZ ±±p"L 9 # G.ú! @œ - Ä@ÐÄ É! Í ó-> & L +æ&âp" 6* LD°g Ĩ >Ĩ] -> Ç < T p Fú"; ´ ([xÒ% ù > ³ à 0f52±±h>Ĩ K¼< T +e Y´ N, 6* L r 350;~ à 0f52>ñE-œE±±ð)3"! Í OS5 à 0f52±±ÈK r3ú³ "´ 6* L Ô*L! 6A! : È±±4 É % 9 # Y´ æ" œ...U 8 mK} â » - , -> Ç =•E-œE Ĩ • & @Kó= Ĩ • 0v £ W# ' -A/£ "ª &c ,% M4 @œ æ" "Y æ" U@ÐÄð8 7! æ@3 ? "s @ÐÄð8 ú&d°g 3n)= \ SE/ Á T>ñN • > 5ù œ8 ±±@ÐÄL -!o E L-E - ' @@ç

'†4 †@ç

Y´ & - ('æA~N1÷Kó±±C.è"x ÓE=y³ # ' -A/£ "µ & M4 C.è"x Ó ...U±±4gKª"4) 5 50;~ ê@è6±±5†KóT &ê • T &N1÷T 1 - 7! T x.ú"! @"ý ' Ý±± D° F¹ C.è"x Ó" F÷k ³ M4 C.è "x Ó±±p2MW• ¹ M\$¼Fú ç 0vK} c " , ³ - ('æ A~N1÷C.è"x Ó±±Á*Ug œ¹ 80! "£ Ò-7 - v 4) 5C.è"x Ó"&c; ' » ÖçX æ" ý ' ³ - .ú ê@èi G < T à 0f æ" "E@è6; (Ý 6 æ" ±±3 ½! D°"O¹@î³ Y´ C.è"x Ó¹ à 0f æ" ±±6 u T 1 • L• T %

ß @BKS

; @ è çk" î . ðidU" Âç _ü] ÷" wUŽêø&LB==wè d ðUkwiü f] ü wUw&üw > ù=÷ç] wð > • ç ðk > >=wUkù
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 0 ÒE(¶ | " ^ " L) `) Ž' » - ('æA~ N1÷&â±G < T à 0f æ" . ÖŽ c ; à 0f" 0! ß " x%œoâ ßK@
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t ãçã9—tJ s¥ • ãbçs¥ B äYJs• 9çã• s¥ S-s 9 Ye Jãç Y9Ys¥
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Âç _÷k^ß" H ö¶ î ÷^ß" ü >÷⁰
 (ßŽ¶ UüU ö ø çUüwèU ç÷ø ç÷f" _Ukwiü=0 x!!" d÷Uk
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Û çY9Pã öç ÷k Uwd > ÷ ùw • ÷ w 4=wçk qø&LB==wè d ðUkççç iü f >=wUkù] Uüç " d÷d ç @÷ç w
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B*Ui < Á刘赢, 关欣, 吴斌 Ž基于概率犹豫模糊综合距离测度的决策方法研究[.] Ž西北工业大学学报, 0! 0, x3):
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] Uüç[.] Ž. • ÷ç U • ÷ qø&LB==wè d ðUkwiü f ç ùkç=÷ç] wð > ÷ w= qUk ç Uk ù ç÷ > &f
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