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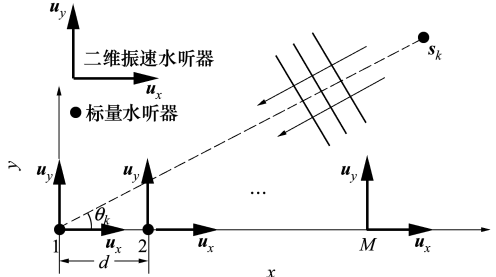
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c] × β±± Fū • › g

$$x_m \% \alpha = \sum_{k=\beta}^K (R) h \% \alpha_k q_m \% \alpha_k \alpha_k \% \alpha + w_m \% \alpha \%$$

< Z "s_k \% \alpha = •.g OYk W \$ ±±: 24 "w_m \% \alpha = •.g OY m W Fūla Y • Ö c] ±±t i g L# & æ g σ⁰ ±± × β4! / : P Ü+a — %q_m \% \alpha_k o = q⁰ \% \alpha - βal ü θ_k/λ g Kbp m & OYk W #1/±± , ú Á2(• "d = •.g, %Eè - Fūla Y • Kbp K!C "λ = •.g" J- %

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$$x \% \alpha = \sum_{k=\beta}^K (R) a \% \alpha_k \alpha_k \% \alpha + w \% \alpha = A \% \alpha \alpha \% \alpha + w \% \alpha$$

< Z âA \% \alpha = Q \% \alpha_o ì H \% \alpha_o + eì | = •.g ý d u r k U / Q \% \alpha_o = q \% \alpha_o "q \% \alpha_o o" - "q \% \alpha_o o Ö H \% \alpha_o = h \% \alpha_o "h \% \alpha_o o" - "h \% \alpha_o o Ö x \% \alpha_o = x_\beta \% \alpha_o "x_o \% \alpha_o" - "x_m \% \alpha_o Ö = •.g M × β±± > i "x • › # \% \alpha = s_\beta \% \alpha_o" s_o \% \alpha_o" - "s_k \% \alpha_o Ö g t # h 1 #1/±±" • w \% \alpha = w_\beta \% \alpha_o "w_o \% \alpha_o" - "w_m \% \alpha_o Ö = •.g M × β±± — - Fū%Kbd±±| æ - Kb = •.g g

R = 6x \% \alpha \alpha \% \alpha W = APA @ + C % \alpha_o < Z "P "C 3 X = •.g K × K ±± \$ | æ - Kb; M × M ±± — | æ - Kb %

$$P = 6x \% \alpha \alpha \% \alpha W C = 6x_n \% \alpha_n \alpha \% \alpha W = \sigma^0 I$$

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$$\hat{R} = \frac{\beta}{L} X X^\alpha = \frac{\beta}{L} \sum_{i=\beta}^L (R) x \% \alpha_i \alpha \% \alpha$$

< Z âX = A \% \alpha \alpha + W x = x \% \alpha_o "x \% \alpha_o" - "x \% \alpha_o Ö g M × L ±± > i "x • › # = s \% \alpha_o "s \% \alpha_o" - "s \% \alpha_o Ö g K × L ±± \$ • › "£ A W = w \% \alpha_o "w \% \alpha_o" - "w \% \alpha_o Ö g M × L ±± — • › % Ö # ± - Fūla Y • Kbd 4~i • › N,

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a \% \alpha_o = q \% \alpha_o ã h \% \alpha_o n = β " 0" - "N \% \alpha_o ' "/ - *1/4 \$ ±± - Fū K b D " n = y - K b = •.g g A \% \alpha_o "A \% \alpha_o = Q \% \alpha_o ì H \% \alpha_o" £ A A \% \alpha_o \ - ±± ; ' " æ > "E ; \% \alpha_o < Z ±± A \% \alpha_o \ 6 m : 9 ±± % » \ " U : 50 ; ~ — ±± ò â 8 " i # h - Fūla Y • K b D / - *1/4 \$ - Fū = •.g g

$$y \% \alpha = \sum_{n=\beta}^N (R) a \% \alpha_n \alpha_n \% \alpha = A \% \alpha \alpha \% \alpha " t = β " 0" - "L$$

< Z â L = •.g ú • # Æ Æ = s Æ \% \alpha_o "s Æ \% \alpha_o" - "s Æ \% \alpha_o Ö "s Æ \% \alpha_o â ÷^{N × β} \ D - Fū " £ A ò 6 K W L < L # = y \% \alpha Æ \% \alpha_o ±± ü - W L < L # = y ^ & Á, m - W, 4 % 8 E Æ Æ \% \alpha_o < "] @ Î' s Æ \% \alpha_o " £ A] @ Î i * U s Æ \% \alpha_o = •.g % Ç v

$$\tilde{p}_n = \frac{\beta}{L} \sum_{t=\beta}^L (R) | \tilde{s}_n \% \alpha | ^0 " \alpha_n = β " 0" - "N \% \alpha_o$$

< Z "p̃_n = •.g OY n W 4~i 7 \$ ì (±±] @ Î i % ' " m 6 4~i % æ \$ ±± ì (P̃ = p̃_β "p̃_o" - "p̃_N Ö % Ü È Kr Á * U Z " (Ü ° — ±± ž ú " : 6 * @ Î

s Æ \% \alpha_o ò 6 K W L < L # = y \% \alpha E ^ \ A! " U P̃ Z : 6 * ò 6 K W L < L # p 2 M % ' " & P̃ A ^ I 20' 8 ä Ä Ö ö ±±] @ Î i % E Æ Æ 7 3 1/2 ' 8 ! o ' Ö ö ±±] @ Î i ! o ? p̃_n C 5 2 s Æ \% \alpha_o \ 7 F ú > ±± % 8 ' 3 @ Ö @ Ç , ! o ? p̃_n %

± E / - *1/4 | æ - Kb 5 μã Ü] @ Î æ "

U! o ? p̃_n ±± D ð 8 Z " g ³ K z { @ ð Ä : o Ó ÷ P Ü + a — ±± ž ú " U t @ ë #1/2 , - ±± ž # 8 " & d Y | æ - Kb R E = y! @ i 3 ? " Ä

$$\hat{R} = \sum_{i=\beta}^K \lambda_i e_i e_i^\alpha + \sum_{i=K+\beta}^M \lambda_i e_i e_i^\alpha = U_s \Sigma_s U_s^\alpha + \alpha U_w \Sigma_w U_w^\alpha = \hat{R}_s + \hat{R}_w$$

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< Z "A_n"=•.g A %C+±0Y_n D %E A "Ç v 0Y_n W4~
 i 7 ÿ • Í — ±±| æ - Kb g
 $Q_n = R' - R_n = R' - p_n^{\wedge} A_n A_n^{\otimes} \% \textcircled{0} o$
 E A

$R' = A \downarrow \downarrow \textcircled{W} \textcircled{M}^{\otimes} \% \textcircled{0} x o$
 < Z "› \downarrow \downarrow \textcircled{W} g N \times N \pm \pm \&> \textcircled{y} K b " & \textcircled{y} 3 i 7 \pm \textcircled{p} 2 M
 g, %Á4~i 7±± \$ ì (' %f › - K b o E 3 Ç) 3 " &
 %o o < Q D æ 3 X! o E 3 Ä

$Q_n^{-\beta} = \textcircled{R}' - p_n^{\wedge} A_n A_n^{\otimes} o^{-\beta} = R'^{-\beta} + p_n^{\wedge} \Gamma_n \% \textcircled{0} "$ o
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 p | æ - Kb 5 ó F "±EM 8 * •

$] = \textcircled{A} Q_n^{-\beta} \textcircled{R}_S - p_n^{\wedge} A_n A_n^{\otimes} o \textcircled{A}_F^0 \% \textcircled{0} o$
 $g \% \textcircled{0} = \textcircled{A} Q_n^{-\beta} \textcircled{R}_S - p_n^{\wedge} A_n A_n^{\otimes} o \textcircled{A}_F^0 " V * U e \textcircled{0} \& \textcircled{z} \textcircled{u}$
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 $g \% \textcircled{0} = \textcircled{A} Q_n^{-\beta} \textcircled{R}_S - p_n^{\wedge} A_n A_n^{\otimes} o \textcircled{A}_F^0 =$

$o e v \textcircled{U} x \% \textcircled{0} - p_n^{\wedge} A_n A_n^{\otimes} o Q_n^{-\beta} \textcircled{R}_S - p_n^{\wedge} A_n A_n^{\otimes} o \textcircled{W}$
 $o e v \textcircled{U} x \textcircled{R}_S Q_n^{-\beta} \textcircled{R}_S \textcircled{W} + v \textcircled{U} x \% \textcircled{0} - p_n^{\wedge} A_n A_n^{\otimes} o Q_n^{-\beta} A_n o \textcircled{W}$
 $o e 0 v \textcircled{U} x \% \textcircled{0} - p_n^{\wedge} A_n A_n^{\otimes} o Q_n^{-\beta} \textcircled{R}_S Q_n^{-\beta} A_n \textcircled{W}$
 $o e v \textcircled{U} x \textcircled{R}_S Q_n^{-\beta} \textcircled{R}_S \textcircled{W} - o \textcircled{A} A_n A_n^{\otimes} o Q_n^{-\beta} \textcircled{R}_S Q_n^{-\beta} A_n +$
 $o e \% \textcircled{0} - p_n^{\wedge} A_n A_n^{\otimes} o Q_n^{-\beta} A_n o \textcircled{0} \% \textcircled{0} \textcircled{0}$

f › %o o < " ,8 ' v \textcircled{U} x \textcircled{R}_S Q_n^{-\beta} \textcircled{R}_S \textcircled{W} ; p_n^{\wedge}
 ±±Mi" g ' " & g \% \textcircled{0} » p_n^{\wedge} ! o - K c) • " Ä

$$g' \% \textcircled{0} = - \alpha_n^{\otimes} Q_n^{-\beta} \textcircled{R}_S Q_n^{-\beta} A_n + o \textcircled{A} A_n^{\otimes} Q_n^{-\beta} A_n o^0$$

$$g' \% \textcircled{0} = ! " \textcircled{A}$$

$$p_n^{\wedge} = \frac{A_n^{\otimes} Q_n^{-\beta} \textcircled{R}_S Q_n^{-\beta} A_n}{\% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} Q_n^{-\beta} A_n o^0} \% \textcircled{0} o$$

: Këp (Ý g" \% \textcircled{0} = 0 \% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} Q_n^{-\beta} A_n o^0 > ! " E A " p_n^{\wedge}
 ! %o g p_n^{\wedge} = • g ì (' " m ò M \$ B à ' Ž # o " E C E ^
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 - p_n^{\wedge} A_n A_n^{\otimes} o \textcircled{A}_F^0 \textcircled{0} - ±±- < i %
 g^3 ü > ! o ? Q_n E 3 K b ± ± @ D Ä F ü " . %o o <
 ' %o o < " Ä

$$p_n^{\wedge} = \frac{A_n^{\otimes} \textcircled{R}'^{-\beta} + p_n^{\wedge} \Gamma_n \textcircled{R}'^{-\beta} + p_n^{\wedge} \Gamma_n \alpha_n}{\% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} \Gamma_n A_n o^0} =$$

$$o e \frac{\% \textcircled{0} + p_n^{\wedge} \alpha_n o \textcircled{A}_n^{\otimes} R'^{-\beta} \textcircled{R}_S R'^{-\beta} A_n}{\% \textcircled{0} + p_n^{\wedge} \alpha_n o^0 \% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} R'^{-\beta} A_n o^0} \% \textcircled{0} o$$

< Z "α_n = $\frac{A_n^{\otimes} R'^{-\beta} A_n}{\beta - p_n^{\wedge} A_n^{\otimes} R'^{-\beta} A_n} \% f \textcircled{0} > \% \textcircled{0} o < - " \beta +$
 $p_n^{\wedge} \alpha_n 3 ! \% ' < " \% \textcircled{0} o < g$

$$p_n^{\wedge} = \frac{A_n^{\otimes} R'^{-\beta} \textcircled{R}_S R'^{-\beta} A_n}{\% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} R'^{-\beta} A_n o^0} \% \textcircled{0} \textcircled{0}$$

f › %o o < ,8 ' " g! o ? p_n^{\wedge} L - > \textcircled{R} ' ± ± u O¹⁻
 @ ð f › %o o < - " ! o ? R' L - > \textcircled{P} ± ± u O¹⁻ @ ð g
 ' m ý 0 Ä" L - > \textcircled{E} = y E ! o ? %
 : Ö t @ \textcircled{\theta} j + \textcircled{\beta} N E Z O Y_n W4~i %æ ± ±
 \$ ì (' = • g g p_n^{\wedge} \textcircled{\beta} " F

$$p_n^{\wedge} \textcircled{\beta} = \frac{A_n^{\otimes} R'^{-\beta} \textcircled{R}_S R'^{-\beta} A_n}{\% \textcircled{0} - p_n^{\wedge} A_n^{\otimes} R'^{-\beta} A_n o^0} \% \textcircled{0} o$$

$$R' \% \textcircled{0} = A \downarrow \downarrow \textcircled{W} \textcircled{M}^{\otimes} \% \textcircled{0} o$$

$p_n^{\wedge} E \textcircled{D} \textcircled{0} > e 0 \textcircled{A} " \textcircled{\beta}] @ \textcircled{\pm} \textcircled{\pm} $ ì (' E = y J \textcircled{\emptyset} C$
 $p_n^{\wedge} \textcircled{\beta} = A_n^{\otimes} \textcircled{R} A_n \% \textcircled{0} x o$
 # Ž ± m ý 0 Ä" , % T T 6 * 3 ½
 f › %o o < " & O Y_n W4~i %æ O Y j N E 8 ä

Ä ± ± \$ ì (' E - ' D T C g
 $p_n^{\wedge} \% \textcircled{0} = w_n^{\otimes} \textcircled{R}_S w_n^{\otimes} \% \textcircled{0} o$
 < Z

$$w_n^{\otimes} \% \textcircled{0} = \frac{A_n^{\otimes} R'^{-\beta} o}{A_n^{\otimes} R'^{-\beta} A_n} \% \textcircled{0} o$$

$$w_n^{\otimes} \% \textcircled{0} = \frac{R'^{-\beta} A_n}{A_n^{\otimes} R'^{-\beta} A_n} \% \textcircled{0} \textcircled{0}$$

f › %o o T M < " - › \downarrow \downarrow \textcircled{W} g N \times N \pm \pm \&> \textcircled{y} K b "

' "R' g • q≠w- Kb%û59 Ä
 $p_n^{\%o} = w_n^{\%o} \hat{R}_s w_n^{\%o}$ %o o
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 9j U0Yf W4~i 7; 0Yz W4~i 7 " £ Z f 3 z " Ux
 Z±± 0W,% \$ #1/2 =.g g A_fs_fÄ; A_zs_zÄ% f ›
 %o@ < " -

$$w_n^{\%o} = \frac{R'^{-\%o} A_n}{A_n @ R'^{-\%o} A_n} \quad \%o o$$

>i %o o < ": Këp(Ý w_n^{\%o} Dpi 0vu g\$ " • ";
 A_n,% & Á±± \$ G ^,L] E@ðA \$ " • "; ' g
 # "w_n^{\%o} E G=• ü A_f 3 A_n "A_z 3 A_n %€ A_n = A_f # "
 w_n^{\%o} G=• ü £ \$ %2 X; A_z,% & Á±± \$ o";
 A_f,% & Á±± \$ G ^,LE@ð% ú x " € A_n = A_z
 # "w_n^{\%o} G=• ü £ \$ %2 X; A_f,% & Á±±
 \$ o"; A_z,% & Á±± \$ G ^,LE@ð% ' "mý
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 4 0Ä" ÊBf» d Y| æ - Kb' ±±70 %

û %o o < ,8 ' "è ¶ w_n^{\%o} 7±±E 7 4

g w_n^{\%o} "w_n^{\%o} ; XÄÖ 0Ä" ±±- E p- FÜ6,% i x
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 | æ - KbR' , • ³ XÄÖ 0Ä" - E p i Z±±d
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 E=y! Ý "¬ R' ! EiDp- W)3 ±±| æ - Kb" c
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 >@E=yE Dý0Ä± 6D°{ ±±@ðÄ: o Ó" g ' "8 '
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 Ux(ÜZ : Ú! Ý | æ - KbR' "£ R' ±±E3 Kd-
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 " %0.úE 0Ä" @ðÄ: o Ó±±: 9 h>@' #½» ü
 - NE ! Ý±±- *¼ \$ ì(' %mý 0Ä" ü NE
 ! Ý/- *¼ \$ ì(' L->@M'°G + M'G + G N..." ;
 M'°G + M'G + G N Í " "çö 0Ä" L->@M'°G +
 M'GL + G N..." ; M'°L°G + M'GL + G N Í
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 ž ú %

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ç Xèö	ßJM' + JM'°G + %æ + M'G + %æ + J + ßç	ßJM' + @M'°G + %æ + M'G + %æ + J - ßç
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#Z± mý 0Ä" "n/8
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 = $\sum_{i=1}^M \lambda_i e_i e_i^H$

0Y 0' œ 6&"! @ i ±T < ç ¼" . ; \$ W
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 $p_A^{ab0} p_A^{ab0} - p_A^{ab0} \hat{O}_n = \beta^0 - N$ %

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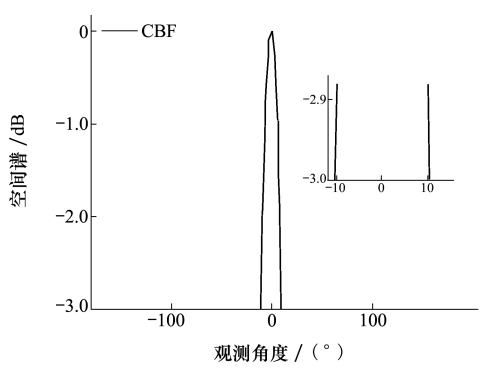
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 , ,L 4 È - + 0 m . g " + 0 - $B_w = 0$! ° %



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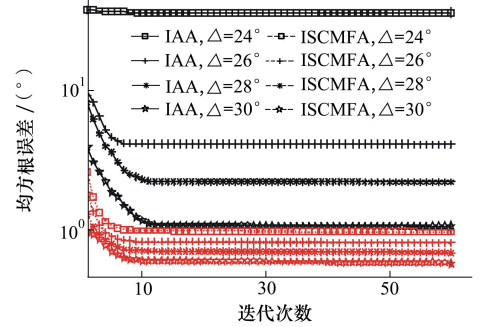
$E \cdot x_i = \frac{\beta}{K} \sum_{k=1}^K \sum_{j=1}^J \sqrt{\frac{\beta}{J}} \sum_{j=1}^J \theta_{kj} - \theta_k$ %o ß o

< Z " $\theta_k = .g 0 Y k W$, 4 ± ± L È æ z " $\hat{\theta}_{kj} = .g 0 Y j N$
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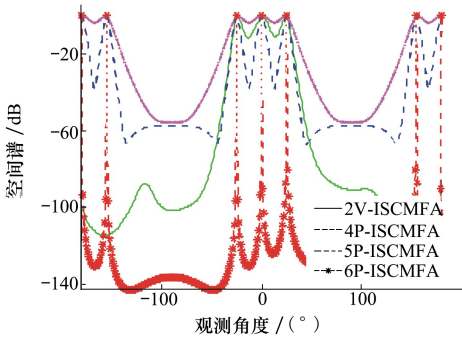
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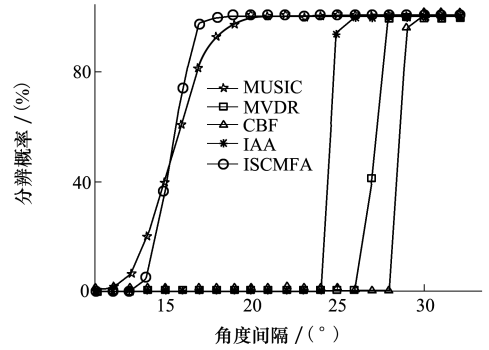
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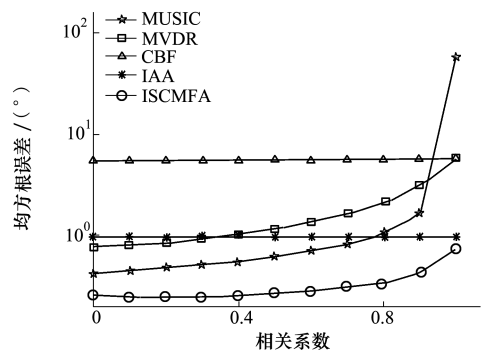
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ü ö¶Ō ü ⇒•žk^ß ; @ö¶H Püž! ≡" i @ç ü žw^ß i @ç.üL^ß"
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(Bž üd•• •! XUž i ù=žü Lž) üdž••kj" ¶•w wç ê• fwüdz=U ž=ç=Ÿ" î=Ōž @ß!@ß" d=žU+)
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Þ æ s-çã ù üwçdf) çqçž + ù d ç žw •üü + qLž ù=žU=žž] U=ž! =wžk+ >ç ü=ž •! U=žU%Ō ö o