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$$F_{\alpha, \beta, \gamma, \delta} = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}x^2} e^{i\alpha x} e^{i\beta x^2} e^{i\gamma x^3} e^{i\delta x^4} dx$$
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$$iZ \quad \dots S' \quad \dots S' \quad \dots S' \quad \dots T\tilde{N}i_V$$

FC!å!=;»»»»»»»»»»Ü!= ,PÍ<»»»»»%€.



»»»0~LzQ` „,MªÎbUÑÑ;»dÀ  
SÑ<l@@°Q8<ÑàlÑÜôžD“ÿ1Ñ  
FSÑÑÿÿ`€xØXÌ>î;°1Ñ  
FSÑÑÿÿ1@ Š 4“6 X

0,,SÑØSQ`Ø¼ž\_`D“ °À:°Q2€Ñv v v v X0My QzQ €àì€.



XûØ€`1#å!=ÑÿBÀä;fàlŷ%2à Úŷ%Ð>d=°€•Àè€€€Ŭ»»»»»;»»»»;»»»»;»»»»;€€IÀ€I»,»»»»;  
 ,,,TÑìv  
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FSÑÑÿÿ

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(°À€,1 @&€\BhÀ€,1€€],1À:°Q2€Sàå!=àÌ€.

GS.€fIb}.Ñ;»»9&Ø€€`àn @xÿú °xÿQ1Ñ;»»»;»»»å!=@èÒ)™M€ 0>LQzQ,,,:`v

$$F_{\alpha\beta} = \partial_\alpha A_\beta - \partial_\beta A_\alpha$$
$$F_{\alpha\beta} = \partial_\alpha A_\beta - \partial_\beta A_\alpha$$
$$F_{\alpha\beta} = \partial_\alpha A_\beta - \partial_\beta A_\alpha$$
$$F_{\alpha\beta} = \partial_\alpha A_\beta - \partial_\beta A_\alpha$$
$$F_{\alpha} \approx \frac{1}{2} \frac{V}{\alpha}$$
$$F \quad \tilde{N} \Delta v$$

Fà@Ø€€`1Ñ;»»»»3`v

„-M`xýú »»»;»»»»»;Ö S`BN.čǎ!=%Ø€@`»»»»;»»»»À----ž X€ !U&c`~

å!=UÑØSCÜ` €

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$$\%0\rangle\rangle\rangle\rangle\rangle\ddot{U}!=\text{ ,PÍ<\rangle\rangle\rangle\rangle\%0\text{€}.$$



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22UÑy€Š>oš6 X



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,,,`žÁ Ø€,,,`žÁ Ø3Ø|ö,,,,Ñÿàl€¼€,,, QààààlØ€€`àÿ°ç° €  
2#ÀQQQQQQQQQQQQQQQQQQQQQQQà Ò@Ò,,Ñÿ`Q QQšL--  
zQQQQQQQÑ€¼€1`8 QQ1ÿ5»»ÀQô•À¬:™àÀ  
FSÑÑëN0ûØ€€`1 v`  
51Ñ©`6 X0~M€ 2zQà ØSØÿÿ%2Q p"@}Ø€€` X0~M€ 2zQà3€  
2zQàzQàÑQ™°zQQQQQQQÑ€¼€hlØ€€`àÑQ3€ &S3€ &S3ÑÀŠÚšØ~M°ÎbUÑÑ;»dÀ  
SÑ<l@@°Q8<ÑàlÑÜôžD“ÿ1Ñ  
FSÑÑÿÿ`€xØXl>î;°1Ñ  
FSÑÑÿÿ1@ X

,S5SôbU0,,,SÑØSQ`Ø¼ž\_`D“ °À:°Q2€Ñv v v v X0My QzQ €àì€.

XûØ€€`1#å!=ÑÿBÀä;fàì`à `1Eh`d= =;»»»»»;Ñì€vÀè€€€Û»»»»»;»»»»»;»»»»»;»»»»»;€  
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FC!å!=;»»»»»;»»»»»Ü!= ,PÍ<»»»»%€.

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„Ñÿİ€ó

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\\BhÀ€,1€€],11`wÌQž` `Ì€ #À €€Ib}.Ñ;»»9&Ø€€`àn @xÿú °xØÿQ1Ñ;»»»»»»»å!=@èÒ}  
™M€ 0›LQzQ,,,:`v  
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Fà@Ø€€`1Ñ;»»»»3`v  
„-M`xÿú »»;»»»»»;Ö S`BN.¢å!=%Ø€@`»»»»;»»»»À----ž X€ !U&c`  
å!=UÑØS X

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2° iÑÑ À,†UĐ>rrrrrrrràÿàÿàÿàÿÑ,,,T s|öÍ`žÁ Ø€,,,`žÁ A@ €1@`»UÑSCÀš,`”ü4,`cl€¼€  
„ÀšB7›L°xØzQÿàÿ X

22UÑŸ€Š>oš6 X

2° iÑÑ À,†UĐ>rrrrrrrràÿàÿàÿàÿÑ,,,T`üpÃ\$4dQÑ`7œL °zQ`žÁ Ø€,,,`žÁ Ø€,,,`žÁ Ø€  
,,,`žÁ Ø€,,,`žÁ Ø3Ø|ö,,,,Ñÿàì€¼€,,, QààààìØ€€`,àÿ°ç° € 2#ÀQÀ[!#ÀÀ[!%6 X

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zQQQQQQQÑ€¼€1`8 QQ1ÿ5»»ÀQô•À¬ç™àÀQÑ€¬ç™ààààà^6 X

»»»0~, :`vìQžQ X0~M€ 2zQà ØSØÿÿ%2Q p"@}Ø€€` X0~M€ 2zQà3€  
2zQàzQàÑQ™ºzQQQQQQQÑ€¼€hlØ€€`àÑQ3€ &S3€ &S`[Ì,3`[Ì,†6 X

0~MzQdÀ  
SÑ<l@@°Q8<ÑàlÑÜôžD“ÿ1Ñ  
FSÑÑÿÿ`€xØXÌ>î;°1Ñ  
FSÑÑÿÿ1@ X

,S5SôbUà,,dd

€>ol@@°Q0``€àÀ:°Q2€Ñv v v v X0My QzQ €àÌ€.



XûØ€€`1#å!=ÑÿBÀä;fàì`à `1Eh`d= =;»»»»»;Ñì€` =;»»»»»;ì>  
K°»»»»»;»»»»»;€€IÀ€I»;»»»»»;,,,,TÑÌv  
FC!å!=;»»»»»;»»»»Ü!= ,PÍ<»»»»%€.

!Ufc`xå!=àò¬àB X

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ÀĚ”\$Q¿Ñ»;»»»»Ü6 X

vìQžQ X0#å!=1Ñ;»»»€€€-è!Ö`€`€® 6 X

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€`àn @xÿú °xØÿQ1Ñ;»»»;»»»å!=@èÒ}™M€ 0›LQzQ,,,:`v  
F ,,,:`v  
F ,,,:`v€5»»'g,,,:````'gA€,,,:`v

$$E > \frac{1}{2} \hbar \omega$$

Fà@Ø€€`1Ñ;»»»3`v

„-M`xýú »»»;»»»»»;Ö S`BN.čå!=%Ø€@`»»»»;»»»»À----ž X€ !U&c`-

å!=UÀ Xå!—Ì>·J°zQ €

[illegible]



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$\mathcal{E}$

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2° iÑÑ À,†UÐ>rrrrrrràÿàÿàÿàÿÑ,,T s|öÍ`žÁ Ø X

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QààààìØ€€`àÿ°ç° € 2#À å!=1Ñ;»»» `žØQQQQQQQqà Ò@Ò,,Ñÿ`Q QQšL--  
zQQQQQQQÑ€¼€1`8 QQ1ÿ5»»ÀQô•À¬;™à@t¶@t¶@t¶@t¶rrrr>rrrrr° X

»»»0~, :`vìQžQ X0~M€ 2zQà ØSØÿÿ%2Q p"@}Ø€€` X0~M€ 2zQà3€  
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€,,`žÁ Ø3¬;â!=`İ,3`À X

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€4Ø3Ø|ö,,,,Ñÿàl€¼€,, QààààlØ€€`àÿ°ç° € 2#À å!  
=1Ñ;»»» `žØQQQQQQQà Ò@Ò,,Ñÿ`Q QQšL--zQQQQQQQÑ€¼€2€Ñv v v v X0My  
QzQ €àl€.



XûØ€€`1#å!=ÑÿBÀä;l@@°Q,,Ñÿ XžQ X.¢` =;»»»»»;Ñì€€ì>ú@°` =;»»»»»;ì>  
K°»»»»»;»»»»»;€€IÀ€I»»;»»»»»;,,,,TÑìv  
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„S` a.¢ `ç°p€İ>i@°å!=1Ñ;»»»»€€€¬è!Õ`€`€®

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Qà3€ 2zCå!=@&€\BhÀ€€Đ€      €™ààà l@@°Ql@5€€€ XÀà`l€ #À œ€lb}.Ñ X



àÿª.¢UÑ º€ 2#Àº;»»»»å!=@èÒ}™M€ 0›LQzQ,,,:`v  
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 = „,S`@`Æ “1ÑÍİŞ 6 X€.

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 = „,S`@`Æ “1ÑÍİŞ 6 X€.

!Ufc`xå!=c€<°”~  
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Qààààì X`Àeå!=€ 2#ÀÀÑ;»P¼)55551.

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åå!=QQQ€@⌘Ò,,Ñ€@⌘Ò,,ÿ,,ÿšL--zQQQQQQQÑ€¼€1`8 QQ1ÿ5»»ÀQô•À`¿™ ààààlf1ÑÑå!  
= `@trrrr 6¶|@tr6¶| `@t`v ¢d1Ñå!=Q ¡,,½@aÁå!Ñå!=Q`p à Ò n1|ö XÑšf|ÇÀæxå!Ø6  
Xÿà“Qå!=QQQQÀh|  
€žÁ 0 €l@5€€:™å!=ì,3`À€,,⌘Ô@ 2Ø€€`Àh|  
€žÁ 0 €l@5€€:™å!=ì,3`À€,,⌘Ô@ 2Ø€€`Àh|  
€€`€€` 2å! `žØQQQQQQQQA Ò@Ò,,Ñÿ`Q QQšL--zQQQQQQQÑ€¼€2€Ñv v v v v  
X0My QzQ €àì€€“&â@ç €àì€.

XûØ€€`1#å!=ÑÿBÀä;l@@°Q,,Ñÿ XžQ X.¢` =;»»»»»;Ñì€€ì>ú@°` =;»»»»»;Ì>  
K°»»»»»;»»»»»;€€ÌÀ€Ì XQQQC Xå!= ,PÍ<»»»»%@!UfÚ—v ,v °àò¬àB X

0~.



„S` Ä<sup>a</sup>.ç`jr X

ÀQô• 6 X



„S`ª.¢`ç°p€İ>ì@°å!=1Ñ;»»»»€€€¬è!Õ X!=Q`p à ÒSå!=å!=3€ 2zC€€  
¡€2CCCCCCCC6 X=QQQQ“0~å!=€€ XÀà`ì€ #@l&€6@Ñå!=ì>ú@6 X€:™å!=ì,

å!= ó@° ,,5@5€€:™å!=ìØ€€`>ú@6 X€:™å!=ì,

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Àd1Ñâ`p<8j\$Ø€€`„Ø€€`>ú@€€`>ú@€Ñ%@ý~(”&â@` €.

Àd1Ñà`P<8j\$Ø€€`„,ØØ€€`€€`€Ñ:€€

`Zd°žÁb1Ñ`ÆeQjaÁÉÍáíúúúúúúúúúúÚéÍáÁS´ ´´S´ À´TÑÍS`ã!= ´´S´@`Æ “1ÑÉİŠ

6 X€

!Ufc`xå!=cÍaÁå!=àò XUfÚ—v ,v Cå!=

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€150€€`.

!Ufc`xå!=cÍaÁå!=àò XUfÚ—v ,v Cå!=

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€150€€.

!Ufc QØ€€`.

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€ÑÆ € XÈå!` €.



Àd1Ñâ`p<8j\$Ø€€`„Ø€€`>ú@€€`>ú@€Ñ%@ý~(”&â@` €.

Àd1Ñâ`p<8j\$Ø€€`„ØØ€€`€€`€Ñ:€€`Zd°`žÁb1Ñ`ÀeQj`p€ÚÚ"U†c€ Xâ!=€ÍaÁS` €  
™2222N°„,TÑÌS`â!= „,S`@`Æ “1Ñ€ÍŠ 6 X€.

!Ufc`xå!=c€<°”~  
€ 2“`

å!=€1@`»UÑSC7œL °zQ`žÁ Ø€,,`žÁ Ø€,,`žÁ Ø€,,`žÁ Xd1Ñås"U†å!=|ö,,,,Ñÿ€`  
j`3333ñ=Q`~€€ `Zdfå!=Àeå!=€ 2@D@¶ĐĐ “1Ñ`

å!=r1aÁå!=ÑOÀUXÕQÕQO Xå!= „,S` å!=QQQQ€đ1`€ €û!= Ø€€`QÕQO Xå!  
= „,S` å!=QQQQ€đ1`€ €û!= Ø€€`QÕQ€€`&S€€`&SÑÁå!+ “1ÑPÀ0WP

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#O å!=fÇÀæxå!|;€

€ ,v CêÑÀd1Ñåf å!= 0 `à `ç°p€Ì>ì@°å!=1Ñ;»»»»€€€¬è!Õ X!=Q`p à ÒSå!=å!=3€  
2zC€E  
¡€2CCCCCCCC6 X=QQQQ“0~å!=€€ XÀà`ì€ #@ÑÀæ€I;» “f å!=@Ò„Ñÿ`ÁS0ÿ€``ó€€  
`Zd°6 X2“`



å!=€1@`Q“2Cv v v v v X0My QzQ €àì€€”&â@ç €àì€.

XûØ€€`1#å!=ÑÿBÀä;l@@°Q,,Ñÿ XžQ X.¢` =;»»»»»;ÑQ€5h€fôØ€€`Àä;l@@°Q,,Ñÿ XžQ  
X.¢` =;»»»»»;ÑQ€5h€fôØ€€`v Ø€€`€€`€Ñ1##À= Ö  
€1Ñ`

vø€€`»;ÑQ€5h€fôø€€`v ø€€`€€`€Ñ1##À= ö  
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vØ€€`»;Ñ€€`Ø€€`»;€€`»;€ÑX.¢@€:™ā!=Ì,

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å!= ó@° ,,5@5€€:™å!=ìØ€€`>ú@6,,Ø€€`>ú@€€`>ú@€Ñ%@ý~(" &â@` €.

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XûØ€€`1#å!=ÑÿBÀä;l@@°Q,,Ñÿ XžQ X.¢`hè@€æ,^TÌ&S^TÌ&S^ÑÀ1#€ord+Ø€€`,,Ñÿ XžQ  
X.¢`hè@€æ,^TÌ&S^TÌ&S^ÑÀ1#€ord+Ø€€`,,Ñÿ€€`>bUÑ #€@×rdúÐÐÐÐÐÐÐØ€  
€`€æ,^TÌ&S^TÌ&S^ÑÀ1#€ord+Ø€€`,,Ñÿ€€`>bUÑ #€@×rdúÐÐÐÐÐÐÐØ€  
€`€æØbUÑ`€hÖ™™™Ñ X €or° ,,5@5€€:™å!=ÌØ€€`>ú@6,,Ø€€`>ú@€  
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Àd1Ñâ`p<8j\$Ø€€`Q`ó%@ý~( À3€ 2zC` iÞZ€æzC À,~Tìâ!== óÀh~( „f,, Àord+Ø€€`„ÑSìØâ!  
=6,,Ø€€`>ú@€€€ø%€€`>æâ!=€€`>ú@€€`>ú@€Ñ%@ý~(”&â@` €.

Àd1Ñå`p ÀÀ~d1Àd1Ñå`p ÀØ€€`d1Ñå`p ÀÀØbUÑ`cSÌå!=ÑåØ€€`d1€€`d€x×â €or° „5@5€  
€:™å!=ÌØ€€`>ú@6,,Ø€€`>ú@€€`>ú@€Ñ%@ý~(”&â@` €.

Ad1Ñã`P<8j\$Ø€€`Q`ó%@ý~( À3€ 2zC` iBZ€æzC À,~Tlã!==( òÁh~( „f,, Àord+Ø€€`„ÑSìØã!  
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= ÀS ÀS Ñ@À0HØ€€€€S``óŠ` `žÁ,,Ø€°€1@»»UÑSC7œL `zQ`žÁ S ÀS=€€€€Ñ:  
€~( „pĐ€,,`žÁ X`X € 2zC€fp1SŠŠŠŠŠÑ`ZÀÀÀÀÀÀÀÀÀÀÀÀÀÀ`],,,S`òÀÀÀÀÀÀÀÀÀÀ  
XÀàŠ``p€ 2S€ 2SÑhèpÑÌS`ã!= CÀCÀ6`61#€ord+Ø€€`„Ñÿ€€>bUÑà€@ÁS°  
€1@»»UÑSC7œL `zQ`žÁ Ø€,,`žÁ Ø€,,`žÁ Ø€,,`žÁ Xd1Ñàs`U†ã!=|ö,,,,Ñÿ€`  
j`3333ñ=Q`~€€`ZdfÑÄã!ã!=d1`€n1ØÑ`zQ@øØ À,~Tlã!==( òÁh~( „f,, Àord+Ø€€`„ÑSìØã!  
=6,,Ø€€>ú@€€€ø%€€>æã!=€€>ú@€€>ú@€Ñ%`@ý~(„&â@` €À #€6SìhèpÑÌS`ã!  
= CÀCÀ6``ã!=Q@j1Ø€€ÑØà à€@ÁS°€1@»»UÑSC7œL `zQ`žÁ Ø€,,`žÁ Ø€  
,,`žÁàgfk@€€dt€"U €ã!>=|ö,,,,Ñ€< °°`Ø€€`žÁ Ø€,,`žÁàgfk@€€dt€"U €ã!>=|  
ö,,,,Ñ€< °°`ãã!“f`ã!>@Ò,,Ñÿ`ÁS0ÿ€€`ó€€ X À=`Q`2Cv v v v v X0My QzQ €ã!€  
€`&â@ç €ã!€.

XûØ€€`€€r Ø>ÁÁÁÁÁÁûØ€€`1#å!=ÑÿBÀä;l@°Q,,Ñÿ XžQ X.  
¢`hè@€æ,~Tì&S~Tì&S^ÑÀ1#€ord+Ø€€`,,Ñÿ XžQ X.¢`å! #€6càlà!=1#€ord+Ø€€`€~€¯ðÑ€< °  
°`Ø€€`žÁ Ø€,,`žÁàgfk@€€dt€"U €å!=!=|ö,,,,Ñ€< °°` àå!“f å!=@Ò,,Ñÿ`ÁS0ÿ€`ó€€  
X À=`Q“2Cv v v v v X0My QzQ €àì€€"&â@ç €àì€.

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