

⌘Ø³ãéµÑÇàÅ×Í;¹Öéà¾×èÍ;ÓË¹´ãËé;ÒÃ´ÓÁÍ fog table
·ÖŞÖ¹EA×İăAè·ÖŞÖ¹

Direct3D ĚÁÒÂ¶ÖŞ ;ÒÃĩ´áÊ´Ş¼Å¹ÖéÊÒÁÒÃ¶áÊ´Ş¼Åá°° D3D â´ÂáÊ
´Ş¼Åá´é·NéŞá°° vertex fog ĚA×İ table fog

à;A°ÖŞ»ÄĐàA·ăAèĚÖAQ¶¹Ö⌘ÇÖAĚÖAÒÃ¶Ò;İÒÃĩ´áÇÃİ D3D ÁÒãªéà
´eàuçA»ÄĚĚÖ·ÖAQ¾áÄĐueÍŞãªé table fog à·èÖ¹Né¹
;ÖAăÅ×İ;µÑÇàÅ×Í;¹ÖéªèÇAăĚéá¹èã´ă´éÇèÒà;A»ÄĐàA·
NŞ;AèÖÇ·Đ·ÖŞÖ¹ă´éµÖA»;µÖ;N°â»Aà«Ěà«İAİ;AÖ¿Ö;¢ÍŞ NVidia

μÑÇàÅ×Í;¹ÖéªèÇÃãËéꝑØ³ÊÒÁÒÃ¶Â;àÅÔ;ìÒÃãªéꝑØ³ÊÁºÑμÔ DirectX
àÇÍÃìªNè¹ãÊAè æ ã¹ã´ ÀàÇÍÃìä´ é
à;ÁºÒ§»ÃĐàÀ·.Öèà¢ÖÂ¹¢Öé¹à¾¼×èÍãªé;Ñº DirectX àÇÍÃìªNè¹;èÍ¹ æ
lÖªãAè·Ô§Ô¹¶éOꝑØ³μO´ μNé§ DirectX àÇÍÃìªNè¹ 6 ÊÅ×Í 7 äÇé
;OÀàÅ×Í;μÑÇàÅ×Í;¹Öéà»¢¹;OÀ;OÊ¹ªÊéAĐºº·Ô§Ô¹ã¹âÊA´ DirectX 5
¹N§¹Né¹à;AÀØè¹à;èOªÔ§ÊOÀOÀ¶·.Ó§Ô¹ã´ éÍÃèÔ§¶U;μéÍ§
ãªéμÑÇàÅ×Í;¹ÖéÊÒ;ꝑØ³μéÍ§;ÒÃÃÑ¹à;ÁÃØè¹à;èÒºÒ§ÃØè¹·ÖèäÁè·Ó§Ò
¹ÊÅ×Í·Ô§Ô¹ãAè»ìμÔ

ãĖĖÎQÃĩ áÇÃì»ÃÑ⁰ðèÒðÇÒÁÅÖ;ϕÍ§ Z-buffer
ãĖĖμA§μOÁ·Oèáí»¾¼ÄÖàð^aN¹μéÍ§;OÁ
â´Â»;μÔ ðØ³ðÇÃ;ÓĖ¹´ãĖĖμÑÇàÅ×Í;¹Õé·Ó§Ò¹
A;àÇé¹ã¹;Ä³Ö·ÖèμéÍ§;OÁ;OĖ¹´ Z-buffer àÍ§ ĖÒ;äÁè;ÓĖ¹
´ãĖĖμNÇàÅ×Í;¹Öē·Ó§O¹ â»Aá;AAáí»¾¼ÄÖàð^aN¹·Oèä^aé Z-buffer
«OèšäAèμA§;Ñ⁰·Oèä´é;OĖ¹´ðèOð¹¿Ö;äÇé ¨ĐäAè·Ó§O¹

ÊÒÁÒÃ¶àÅ×Í;ãªéà·²Ô²ÊÓËÃÑºÑ¿à¿ÍÃì;ÒÃáÊ´§ÀÒ¾ 3 ÁÔµÔä´é
²Ø³ÊÁºÑµÔ¹Õé.ÓãËéÌÒÃì´áÇÃìÊÒÁÒÃ¶ãªé;ÒÃ.Ó§Ò¹µèÒ§ æ
ÊÔÊÃÑºÑ¿à¿ÍÃì;ÒÃáÊ´§ÀÒ¾ 3 ÁÔµÔä¹áì»¾ÁÔà²Ñ¹ 16 °Ôµ
à¾×èìãËéÊÔÁÔÃ¶ÊÃéÒ§ÀÒ¾ 3 Ð ä´éÃÖ»ÃÐÊÖ.ÔÃÒ¾ËÛ§ÃÔè§¢Öé¹

ıÖÃıÓĚ´ãĚéáÊ´şâÂıé NVidia ã¹ Direct3D

μÑÇàÅ×ıı¹Œé¨ĐáÊ´şâÂıé NVidia

·ÖèÅØÅÀèÖŞçİŞ¨İAO^{3/4}ç³Đ·ÖèÅN¹áı»^{3/4}ÅÔàσªÑ¹ Direct3D

â»Ãà«Êà«ÍÃîÃÒ¿Ôî NVidia ÊÒÁÒÃŦÊÃéÒŠÁÔ»áÁç»â
ÁÎÑµâ¹ÁÑµÔà³⁄₄×èì³⁄₄ÔèÁ·ÑéŠ»ÁĐÊÔ· ÔÁÔ³⁄₄ã¹îÔÁÊèŠŦéÍÁÙẢîÒÃÊÃ
éÔŠ³⁄₄×é¹¹⁄₄ÔÇ¹⁄₄èÔ¹⁰ÑÊáÁĐ»ÁĐÊÔ· ÔÁÔ³⁄₄ã¹îÔÁ·ÔŠÔ¹ŦÍŠál»³⁄₄ÃÔàª¹Ñ¹
ÍÁèÒŠäÃîçµÒÁ â»ÃáîÃÁáÍ»³⁄₄ÃÔàª¹Ñ¹⁰ÒŠ»ÃĐàÀ·ÍÒ·ÁŦîÒÃáÊ
¹⁄₄Á·ÔèäÀèŦUîµéÍŠÊÔîŦÔÊ¹ ãÊéãéªØ³ÊÁ⁰ÑµÔÁÔ»áÁç»ÍÑµâ¹ÁÑµÔ
îÔÁáîé»ÑÊÔ ãÊéªØ³Á·ÁĐ·Ñ⁰îÔÁÊÃéÔŠÁÔ»áÁç»ÁŠ ·¹îÇèÔ·ĐáÊ
¹⁄₄ÁŦUîµéÍŠ îÔÁÁ·ÁĐ·Ñ⁰ÁÔ»áÁç»·ĐÊÔÁÔÁŦáîé»Ñ-
ÊÔîÔÁÇÔŠµÔáÊ¹èŠ³⁄₄×é¹¹⁄₄ÔÇãÊè "äÀèÁÔÁÍÁµèl"
(áµè·Đ·ÔãÊéªØ³ÁÔ³⁄₄ŦÍŠîÔÁáÊ·¹⁄₄ÁÁ·ÁŠ·éÇÁäè¹îÑ¹)

^aèÇÂãĚé¤Ø³ÊÒÁÒÃ¶àÅ×Í;ÇÔ,ÕÁÔ»áÁç»ÍÑμâ¹ÁÑμÔ·Õèâ»Ãà«Êà«ÍÃì;Ã
Ö¿Öì"Đã^aé
¤Ø³ÍÒ"àÅ×Í;ÇÔ,ÕìÒÃÁÔ»áÁç»á^{oo}ă^oÅÔà¹ÕÃÃĚÃ×Íá^{oo} 8-tap anisotropic
â´A·Oèá^{oo}ă^oÅQă¹ÔAAì"ĐãĚé»AĐÊÖ·ÔAO¾·Oè´ÖìÇèÖã¹¢³Đ·Oèá^{oo}
anisotropic "ĐEOAOA¶áE'şAO¾ă´é¤Å^aN'ìÇèO

⌘Ø³ÊÒÁÒÃ¶»ÃÑº⌘èÒä°áíÊ LOD (Level of Detail) ã¹;ÒÃÁÔ»áÁç»ä´é
⌘èÒä°áíÊ·ÕèµèÓ·Ð·ÓãËé⌘Ø³ÀÒ¾¼¿Í\$ÀÒ¾¼´Õ¿Öé¹
ã¹¿³Ð·Öè;ÔÁà¾¼ÖèÀ⌘èÒä°áíÊ·ÐªèÇÁà¾¼ÖèÀ»ÃÐÊÔ·ÔÀÒ¾¼;ÒÃ·Ó\$Ò¹¿Í
\$â»Áá;ÁÁáí»¾¼ÁÒàªN¹ ⌘Ø³ÊÔÁÔÃ¶à×Í;·Ô;⌘èÒä°áíÊ·Ô¿ÍÁµì 5 ⌘èÔ
àÁÔèÀ·Ô; "⌘Ø³ÁÔ¾¼¿Í\$Ô¾¼´Ô·ÖèÊØ" ä»¹¶Ô\$
"»ÃÐÊÔ·ÔÁÔ¾¼;ÔÁÂN¹·Ô·ÖèÊØ"

ÃÒÂ;ÒÃ;ÒÃµÑé\$µèÒá[∞];ÓË¹àís (ËÃ×Í "tweak") .ÕèµØ³á' é°Ñ¹.Ö;äCé
ãÉéàÃ×Í;µNÇàÃ×Í;Ö;AÒÃ;ÒÃà^{3/4}×èlàAÕÃ;ã^aésÒ¹;ÒÃµÑé\$µèÒ.Õèµéís
;ÒÃ "Ö;¹Né¹ãÉéµÃÔ;»ØèA "µ;Ã\$" ËÃ×Í "µ;Ã\$ã^aé"

aèCÂãĖėø³ĖÒÀOÃĴ¹Ń¹.Öj;ÒÃũÑésæèÒ»Ñ¹·ø°Ñ¹ă'é (ÃĈÁ·Ñésªø
 ;OÃũÑésæèQã¹ăĬĐÄċĴ;"ĉelAUĀà¾OèAãµOÄċĴS Direct3D") à»ĉ¹
 "AU»ă°°;OÃũÑésæèO·ŖejŖĖ¹'ăĴS" àA×el¹Ń¹.Öj;OÃũÑésæèQãĖĈ
 ÄĐ°°·Đ¹ŖæèŖ¹Ñé¹ă»à»ĉ¹ĀOÄĵOÄµel·éOĀAÒÄĵOÄă ŖÄ·ŖèAŖĬAUè
 ĖĀÑS"·Öj;ø³ă'é;ÒÃũÑésæèŖ·ŖĖ¹·Ŗ·ŖèĖø·ĖÓĖĀÑ°ăĴĀ°° Direct3D
 äĖĈ äĖĖ°Ń¹.Öj;OÃũÑésæèŖ¹Ñé¹ăĈăă»ĉ¹AU»ă°°·ŖejŖĖ¹'ăĴS (custom
 tweak) «ŖèšªèĈĀãĖĖø³ĖÒÀOÃĴĵŖĖ¹'æèŖĵĴ;Ŗĵ Direct3D ä'elĀèŖšĈ
 'ăĈĈĈĀĀĀèµelšµÑésæèŖµŃĈăĀ×ĴăµèÄĐĬĀĖŖšăĖĀè·ÑésĖĀ'

ÅºıÒÃµÑéŞ¸èÒÊÕ·Õèä´éàÅ×Í;äÇé¨ÒıÃÒÂıÒÃ

àÃÕÂ;æèÒ´Õ¿ÍÅµìϕÍ§;ÒÃµÑέ§æèÒ·Ñέ§ËÁ´αx¹

áÊ´sä´ÍĐÅçí«ÖèšãªéÊÓËÃÑº»ÃÑºà»ÅÕèÂ¹;ÒÃµÑé\$ªèÒí×è¹ æ ¢Í\$
Direct3D

μÑÇàÀ×Í;¹Öéãªéà»ÃÕèÂ¹ÇÔ_Õ;ÒÃ;ÓË¹
μÓáË¹èŞçÍŞ¾×é¹¹¼ÔÇçÍŞă·çjà«À (ÍŞªì»ÃĐ;ÍºçÍŞ¾×é¹¹¼ÔÇ)
;ÒÃà»ÃÕèÂ¹ªèÒ¹Öé·ĐÁÕ¹¼ÃµèÍ;ÒÃ;ÓË¹ μÓáË¹èŞà·çjà«Àà´ÔÁ â
A·OèªèO´O;ÍÃµì·ĐÉ;ªÃéÍŞ;NºªØ³EAºNµOçÍŞ Direct3D
«Í;µíàÇÁºOŞ»ÃĐàA·ÍÒ·µéÍŞ;ÒÃ;ÒÃ;ÓË¹
μÓáË¹èŞà·çjà«ÃăÇéµèOŞEO;´éÇAªØ³AÒ¾ă¹;ÒÃáÊ
·Ş¹¼AAO¾¼çÍŞál»¾¼AÒàªªN¹»ÃĐàA·ŃŞ;ÃèOÇ·Đ´OçOé¹ ËÒ;ÁÕ;ÒÃ;ÓË¹
·çÍÁUÀà·çjà«ÃăÊAè.â
·A»ANºá¶ªªA×èÍ¹ă»AÒÃĐËÇèÒŞÁØÁº¹«éÒÃáÃĐ··Ø
·EU¹Ãì;ÃOŞçÍŞà·çjà«A

â»Ãà«Êà«ÍÃìÃÒ¿Ôìã^aé"Ó¹Ç¹Ë¹èÇÂ¤ÇÒÁ"ÓÇÍ\$ÃĐ⁰⁰·ÕèÃĐ⁰ØäÇéÇÍ\$·Õè
àìç^{03/4}×é^{11/4}ÔÇä' é (¹ì"Ôì"ĐμÔ' μNé\$E¹èÇÂ¤ÇÒÁ"ÓÇÍ\$ìÔÃì' áÊ
§¹/₄Ãà³/₄ÔÀ\$ÍÀèÔ\$à ÔÀÇ)

ËÁÒÂàËμØ: "Ó¹Ç¹Ë¹èÇÂ¤ÇÒÁ"ÓÊÙ\$ÊØ
'ÇÍ\$ÃĐ⁰⁰·ÕèÊÔÀÔÀ¶¹ÔÀQã^aéÊÀéÔ\$³/₄×é¹¹/₄ÔÇÊÔÀÔÃ¶Ó¹Ç³ä
'é"Ôì"Ó¹Ç¹ RAM ·ÕèμÔ' μNé\$ÍÀUèã¹à¤Ã×èÍ\$¶ÍÀ³/₄QÇàμÍÀìÇÍ\$¤Ø³
ÃÔè\$μÔ' μNé\$ RAM äÇéÀÔìà·èÔã' ¤èÔ·ÕèÊÔÀÔÀ¶¹ã^aéä
'éìç"Đà³/₄ÔèÀÀÔìÇÔé¹' éÇÀ

ìÒÃμNé\$¤èÒ¹Õéã^aéä' éìÑºìÒÃì' áÊ' §¹/₄Å PCI (ËÃ×ÍìÒÃì' áÊ' §¹/₄Å AGP
·Õè·Ô\$Ô¹ã¹ãÊÀ' PCI)

àÅ×ÍµÑÇàÅ×Í¹Õéà¾×èÍÂ;àÅÔ;ÏÒÃ«ÔŞâ▯Ãä¹«ìá¹ÇµÑés
·ÓãĚéáĚ´şÀÒ¾ă»ÂÑşĚ¹éÒ´Íă´é·Ñ¹·Õâ
´ĀăAèµèİŞĀİăĚéAO;OA«QŞâ▯Āä¹«ìAO¾ă¹á¹ÇµÑés;ÅÑ°ă»·Õè´ÍÀÒ¾
áĀĐªèÇĀăĚéİµAO;OAáĚ´ş¼ĀĚUŞ;ÇèOİµĀO;OAAOà¿ĀªİŞ´ÍáĚ
´ş¼Ā áµèİO´Ěèş¼Ā;ĀĐ·ºµè▯Ø³AO¾İŞAO¾ă´é

μÑÇàÅ×Í;¹Õëãªé;ÓË¹´´Ó¹Ç¹;ÒÃÅ´ÃÍÂËÂÑ;·Õèãªéã¹áí»¾ÅÔàªªÑ¹ D3D
;ÒÃÅ´ÃÍÂËÂÑ;à»ç¹à·ª¹Ôª·Õèãªéã¹;ÒÃÅ´ "àÊé¹¢ÃØ¢ÃÐ"
«Òè§ºÔ§ªANé§´Ð»AÔ;_¢Öé¹µOÀ¢¹º¢ÍSAÔ¾¾ 3D
EOËANºáí»¾ÅÔàªªÑ¹ºQ§IAèO§_ªØ³EOAOA¶àÅ×Í;ä
´éµNé§áµè;OAAºÃÍÂËÂÑ;||;ãÊéEÁ´ä»´¹¶OSàÅ×Í;ãÊéÁÕ´´Ó¹Ç¹ÃÍÂËÂÑ;ä
´éEUSEØ´

ã^aéµÑÇàÅ×Í¹Õéã¹ìÒÃÅ
´AIAEÄN;ã¹ál»¾¼ÄÖà^aN¹. ÕèäÁèÊÒÁÒÃ¶ã^aé^aØ³ÉÁ^oÑµÔ¹Õéä´éâ´ÂµÃ§
â»Ã´·ÃÒ^oÇèÒ^oÒ§ál»¾¼ÄÖà^aN¹«Öè§äÁèÊÒÁÒÃ¶ã^aéà·^a1Ô^a1Õéä
éìÖ·ÖãÉéäAèÊÖÁÖÁ¶áE´§¼¼Ää´éìAèÖSàÉAÖÐÉA ÉÄ×láÄèìÖ`àÃ¹à
ìAìAÖ¾¼ä´éµÖA»ìµÖ^aØ³ÇAã^aéµÑÇàÅ×Í¹ÖéìAèÖSADÄN´ADÇN§ »Ö
µNCàÅ×Í¹ÕéÊÖì^aØ^{33/4}»NEÖã¹ìÖAäE
´§¼¼ÄäìAEÄ×láì»¾¼ÄÖà^aN¹«Öè§äAèÊÖÁÒÃ¶ã^aéà·^a1Ô^aìÒÃÅ´ÃíÄËÄÑìä
e

μÑÇàÅ×í;¹Öéãªé;ÓË¹
;ÖÀàμΑΟΑΑ·Ö¹Ç¹à;ÃÁ¢Í§«Ö¾ÖÂÙ;èí¹.Öè·Ð»ÃÐÁÇÅ¼ÅàÁ×èÍªØ³àÅ
Ö;ãªé;ÖΑ«Ö§âªÃª¹«íã¹á¹ÇμÑé§
ã¹ºÒ§;Ã³Ö ÂÔè§ΑÖ·Ó¹Ç¹à;ÃÁÁÒ;¢Öé¹à·èÒã´ "input.Jag"
ÍÖ·μíºE¹Í§μèÍØ»í;A³íμèÖ§ æ àªè¹·ÍÆμÖè; à;Aá¾ EA×Íá»é¹¾ÔÁ¾ìã´ é
·Ö¢Öé¹
ãËéÁ´ªèÒ¹ÖéÅ§ËÒ;¾ºÇèÒ;ÒÃμíºÊ¹Í§μèÍØ»í;Ã³íμèÒ§ æ
·Öèªª×èÍΑμèÍΑÙè;ÑºªªÃ×èÍ§ªÍΑ¾ÖÇàμÍΑì»ç¹ã»ÍÆèÖ§ÅèÒªéÒÁÒ;ã¹¢
³Ð·ÖèªØ³àÆè¹à;A

ªèÇÂãĚéä´ÃàÇÍÃìÊÒÁÒÃŕãªéÊèÇ¹¢ÂÒÂ OpenGL
GL_KTX_buffer_region ä é

ªèÇÂà¾ÔèÁ»ÃĐÊÔ·ÔÀÒ¾¢Íſâ»ÃájÃÁ·ÕèªªéÊÃéÒſâÁà´Å 3D
·ÔèÊ¹NºÊ¹Ø¹jÔÁ·ÔſÔ¹ÀèÇÁjNºÊèÇ¹¢AÔA¹Oé

aèÇÂãĚĚĚÒÁÒÃ¶ã^aéĚ¹èÇÂ[▯]ÇÒÁ^ˆÓĚÓĚÃ[°]áĚ
ˆs^{1/4}Ä^ˆÖĚ¹èÇÂ[▯]ÇÒÁ^ˆÖĚÃĚĚ^ˆé àÁ×èĚĚ¹ãĚĚã^aéSÒ¹ĚèÇ¹ϕÄÒÄ
GL_KTX_buffer_region
ÍĚèÒSãÄĚĚ^ˆÖĚÄ^ˆÓ¹Ç¹Ě¹èÇÂ[▯]ÇÒÁ^ˆÓĚ^ˆĐ⁰⁰¹éÍĚĚèÒ 8 àÄĚĐä[°]μĚ
▯Ø^{3ˆ}ĐäÄĚĚÖÖÖÄ¶ã^aéĚèÇ¹ϕÄÖÄá^{00ˆ}ÜĚNÄà^{3/4}Ä¹ (dual planes) ä^ˆé
ĚÒÃμÑĚS[▯]èÒ¹Œé^ˆĐäÄèÄ^{1/4}ÄĚÒĚäÄèä
éã^aéSÒ¹μNÇàÄ×ĚĚ^ˆã^aéSÒ¹ĚèÇ¹ϕÄÖÄ^{3/4}×é¹·ŒèϕÍS[°]ÑĚàĚÍÄĚ^ˆ

ıÖÃıÖĚ¹ˆãĚéã^aé;ÔÅàıíÃ\ fast linear-mipmap-linear
Đ^aèÇÀà^{3/4}ÔèA»ÃĐÊÔ.ÔÀÔ^{3/4}ÇİŚáı»^{3/4}ÃÔà^aN¹
áμè^aØ³ÀÔ^{3/4}ÇİŚÀÔ^{3/4}İÔˆÁˆÃŚ
ã¹ĚÅÒÂæıÃ³Õ^aØ³ÀÔ^{3/4}ÇİŚÀÔ^{3/4}ĐÅ
ˆÃŚãAèAQı¹NıˆŊŚ¹Ŋé¹^aØ³ˆÔŚ^aÇÃıÖĚ¹
ˆãĚéã^aéŚÔ¹^aØ³ÉA^oNμÔ¹Ôéà^{3/4}×élãĚé»ÃĐÊÔ.ÔÀÔ^{3/4}à^{3/4}ÔèÁÇÖé¹

μÑÇàÅ×Í;¹ÕéªèÇÃãËé OpenGL ÊÒÁÒÃ¶ãªé;ÒÃ·Ó¿ÔÅàμÍÃì anisotropic
ã¾¾×êlã¾¾ÔèA∅³ÃÖ¾¾ϕl§AÖ¾¾

ãĖĕàĀ×ĭjμÑĈàĀ×ĭj¹Ōĕà³⁄₄×ĕĭĀĭ;àĀŌĭj;ŌĀãªĕä´ĀàÇĭĀĭĖŌĖĀÑªø
 ¢ŌĖNĖS³⁄₄ŌàĖĖ¢ĭS«Ō³⁄₄ŌĀU
 «Ō³⁄₄ŌĀUºŌS»ĀĐĀ.Ā.Ė¹ÑºĖ¹Ÿ¹ªŸ ¢ŌĖNĖS 3D «ŌĖSãªĕä
 ´ĕĭNªā»Āà«Ėà«ĭĀĭjĀŌ;Ōj Nvĭdĭa
 ¢ĭS«Ÿ³ªĀĐª³⁄₄ŌĕĀ»ĀĐĖŌ. ŌĀŌ³⁄₄ªĖĖàj;ĀĖĀ×ĭā»Āáj;ĀĀáĭ»³⁄₄ĀŌàªĀÑ¹
 3D μÑĈàĀ×ĭj¹ŌĕªĕĈĀãĖĕgŸ³ĖŌĀŌĀĭENĖSĀĭ;àĀŌĭj;ŌĀãªĕäªŸ ¢ŌĖNĖS
 3D ³⁄₄ŌàĖĖĕĖĀĖĕŌ¹Ōĕã¹ăĀàÇĭĀĭ
 «ŌĖSĀŌ»ĀĐĀĀª¹ĭā¹jĀĀà»ĀŌĀªª.ŌĀª»ĀĐĖŌ. ŌĀŌ³⁄₄ĖĀ×ĭāªĕã¹j;ŌĀáj;ĕ»
 NĖŌ

µŃCā×l|āĖĀē0¹Ōē·Đ;ŌĖ¹;ŌĀĀ'ĀĪĖĀŃ;ĵᵃᵃµçĀĖ¹é0·Ī
ĖŌĖĀNᵃᵃᵃ×ēlᵃ.Ōēāēā'ĀāCĪĀlOpenGL;ŌĀĀ
'ĀĪĖĀŃ;ĵ»ç¹ā.ᵃ¹Ōᵃ.Ōēāēā¹;ŌĀµēᵃçl¹Ōlſl¹ᵃ'ĵuĪĖĖāĀŌĀᵃ³⁄₄×ēlĀ'
"àĖé¹çĀŌçĀĐ" «Ōēᵃ»ĀŌl.āĖĖāĖc¹ā¹⁰ŌᵃANēᵃçŌ.Ō;ŌĀāĖ'ᵃ¹⁄₄Āāᵃᵃ
1.5 x 1.5ĖŌĀŌĀĴĀ'ĀĪĖĀŃ;çlᵃŌᵃ³⁄₄ā'ēlĀēŌᵃ'ŌāĀŌēĀĀ ç³Đ.Ōēāᵃᵃ 2 x
2·Đ.ŌāĖĖĀŌᵃ³⁄₄.Ōēā'ēĀŌᵃᵃŌ³ĀŌᵃ³⁄₄Āl'āĀŌēĀĀ

ãĚéä´ ÃàÇÍÃìàíçj«ì»ÍÃìµÃÙ»á⁰⁰³/₄Ôjà«Å¢Í§ÊàµíÃÔâí ã¹¢³Đ¹Õéâ»ÃájÃÁ
OpenGL ``Đă^aéÊàµíÃÔâíáẢĐ``Đă^aéàẢ¹Êì^aÑµàµíÃì¢Í§ÊàµíÃÔâí

ãĚéä´ÃàÇÍÃìàíç;«ì»ÍÃìμÃÙ»á⁰⁰³/₄Ô;à«Åà³/₄×èÍ;ÒÃ«éÍ¹ÀÒ³/₄
à³/₄×èÍãĚéâ»Ãá;ÃÁ OpenGL ã^aéϣØ³ÊÁ°ÑμÔ;ÒÃ«éÍ¹ÀÒ³/₄ä´é

μÑÇàÅ×Í¡¹ÕéªèÇÃãËé OpenGL ÊÒÁÒÃ¶ãªé¡ÒÃ·Ó¿ÔÀàμÍÃì anisotropic
à¾¼×èíà¾¼ÔèÁ¤Ø³ÀÒ¾¼¢Í\$ÀÒ¾¼ â»Ã
´ÊÑ\$à¡μÇèÒ¡ÒÃàÅ×Í¡¤Ø³ÊÁºÑμÔ¹Õé¨Ðà¾¼ÔèÁ¤Ø³ÀÒ¾¼¢Í\$ÀÒ¾¼áμè¨Ð·Ó
ãËé»ÃÐÊÔ·ÔÀÒ¾¼¢Í\$¡ÒÃáÊ´§¹¼ÅÅ´Å\$àªè¹¡Ñ¹

àÁ×èí;ÓË¹`ãËëä`ÃàÇÍÃ` OpenGL ``Ñ´ÊÃÃºÑ¿à¿ÍÃ`
´éÒ¹ËÃÑ\$áÃĐºÑ¿à¿ÍÃ`íaÊ´\$ÀÒ¾ 3 ÁÔµÔäÇé·ÖèÃĐ´ÑºÇÒÁÃĐàÍÕÂ
´¢Í\$;ÒÃáÊ´\$¼ÃÃĐ´Ñº`ÕÂÇ;Ñ¹

ÇÔ,Õ;ÒÃ¹Öé`Đä´é¼ÃÂÔè\$¢Öé¹ËÒ;ãªéË¹èÇÂÇÒÁ`Ó;ÒÃáÊ
´\$¼Ã¢Í\$â»Ãá;ÃÁ«Öè\$ÁÕËÃÒÂË¹éÒµèÒ\$

ËÒ;µØ³äÁèãªé\$Ò¹ä`ÃàÇÍÃ` OpenGL `ãËé`Ñ
´ÊÃÃºÑ¿à¿ÍÃ`ÊèÇ¹ËÃÑ\$áÃĐºÑ¿à¿ÍÃ`íaÊ´\$ÀÒ¾ 3 ÁÔµÔäÇé
´éÇÂ;Ñ¹ã¹·Ø;Ë¹éÒµèÒ\$.Õèáí»¾ÃÔàªÑ¹¹Ñé¹ÊÃéÒ\$¢Öé¹

µØ³ÊÁºÑµÔ¹Öé`ĐªèÇÂ¾ÔèÁ»ÃĐÊÔ·ÔÀÒ¾¢Í\$â»Ãá;ÃÁ OpenGL
«Öè\$ãªéË¹éÒµèÒ\$ËÃÒÂË¹éÒµèÒ\$¾ÃéÍÁ;Ñ¹

μÑé\$⌘èÒǎĚéĭÑºâ»ÃáĭÃÁ OpenGL
·ÕèàÅ×ÍĭäÇéà¾×èÍǎĚéâ»ÃáĭÃÁ·Ó§Ò¹ă´é¼Å´Õ·ÕèÊ∅´

µÑÇàÅ×Í;¹Öéãªé;ÓË¹ÇèÒ¾×é¹¼ÔÇ·ÖèÁÖÃĐ'ÑºÊÖ¹Ñé¹ æ
Đ¹ÖAOãªéã¹â»Áá;ÁÁá»¾ÁÖàªN¹ OpenGL ĒÅ×ÍäAè
µÑÇàÅ×Í; **Use desktop color depth** à»ç¹;ÒÃãªéªÇÒÁà¢éÁ¢ÍÊÖà
ÖAÇ;Nºä'É;ì·Í»¢Í§ÇÖ¹ä'ÇÈì
µÑÇàÅ×Í; **Always use 16 bpp** áÅĐ **Always use 32 bpp** à»ç¹;ÒÃ;ÓË¹
ãÊéãªé¾×é¹¼ÔÇ·ÖèÁÖªÇÖÁà¢éÁÊÖ·Öè;ÓË¹ ä
'ÄäAèªÖ¹Ö§¶Ö§;ÖÁ;ÓË¹ ¢èÖã¹à'É;ì·Í»

μÑÇàÅ×Í;¹ÕéãªéÃĐ°ØâĚÁ;òÃ·Ó§Ò¹ buffer flipping
ãĚĚ·Ó§Ò¹áªªμçÆĚ¹éÔ·ÍçÍšál»¾ÅÖàªªN¹ OpenGL
â´ÂªØ³ÊÒÁÒÃ¶àÅ×Í;ãªéÇÔ·Õ¶èÒÂâÍ¹çéÍÁÙÅªªªÅçÍª (Block Transfer)
à¾¾·¿·ÅÖ» (Page Flip) ĚÅ×ÍàÅ×Í;ÍÑuâ¹ANuÔ (Auto-select) ;çã´é
μÑÇàÅ×Í;àÅ×Í;ÍÑuâ¹ANuÔ·Đ·OãĚéã´ÂàÇIAiàÅ×Í;ãªéÇÔ,Õ·Õè´Õ·ÕèÊØ
μOAªèÔªÍ¹¿·Ô;çÍšÍOÄÍ·áÇAi

µÑÇàÅ×Í;¹Õéãªé;ÓĚ¹´;ÒÃ«ÔŞâªÃä¹«ìá¹ÇµÑéŞã¹â»ÃájÃÁ OpenGL

µÑÇàÅ×Í; Always off

“ĐăĂèãªé;ÔA«ÔŞâªAä¹«ìá¹ÇµÑéŞ¢ÍŚál»¾⁄₄ĀÔàªªÑ¹ OpenGL ·ÑéŞĚÁ´

µÑÇàÅ×Í; Off by default “ĐăĂèãªé;ÒÃ«ÔŞâªAä¹«ìá¹ÇµÑéŞ

¹;ÇèO“ĐAOâ»AájAAál»¾⁄₄ĀÔàªªÑ¹ă´àĀŌĀ;ăªé

µÑÇàÅ×Í; On by default “Đăªé;ÒÃ«ÔŞâªAä¹«ìá¹ÇµÑéŞà»ç¹ªèÒ

“O¿ĬĀµì¹;ÇèQ“ĐAOâ»AájAAál»¾⁄₄ĀÔàªªÑ¹.OèăĂèµéĬŞ;ŌĀăªéŞO¹“ÖŞ

“ĐăAO;ăªé;ÔA«ÔŞâªAä¹«ì¹Oé

ãĚé°Ñ¹.Öï;ÒÃµÑé§¤èÒà»ç¹ "ÃÛ»áº.Õè;ÓĚ¹´àÍ§"
àA×èÍ°Ñ¹.Öï;ÒÃµÑé§¤èÒãĀéÇ
AĐºº.Đ¹Ó¤èÒ¹Ñé¹ă»ă»ç¹ĀOĀ;ÒÃµèÍ.éÒĀĀÒĀ;ÒĀà´ÔÁ.ÕèĀŎÍĀÙè
ĚĀÑ§¨Ò;¤Ø³ă´é;ÒÃµÑé§¤èÒ.Õè´Õ.ÕèĚØ´ĚÓĚĀÑºáÍ»¾ĀÔà¤ĀÑ¹
OpenGLăĀéÇ
;ÔĀºÑ¹.Öï;ÒÃµÑé§¤èÒ¹Ñé¹ăĆé¨ĐªèÇĀăĚé¤Ø³ĚÒĀÒĀ;µÑé§¤èÒ¤Í¹¿Ô;
OpenGLăéĪèO§ĀÇ´àĀçÇ;èÍ¹.Ŏè¨ĐàĀŎèĀăªéâ»Āá;ĀĀă
´ĀăĀèµèÍ§µÑé§¤èŎµÑçăĀ×ĪµèO§æăĚĀè.Ø;¤ĀÑé§

ıŦÃã^aéáŦ^oàĀ×èı^{1a}èÇÃãĖé^ø3»ÃŦ^oÇÒÁÊÇèÒŞ ıÇÒÁıÁ^aŦ^r
ĖA×ıııèŦáıAAŦŦıŦŦá^{a1}à¹ĀĖŦ.ŦèàĀ×ııä^ré
ã^aéıŦŦáıéäÇĖŦà^{3/4}×èı»ÃŦ^oÇÒÁÊÇèÒŞ.ŦèáıııèÒŞıŦ¹ĀĐĖÇèÒŞĀŦ»ı
é¹Ŧ^oŦ^oıŦ^oıŦıŦı^{3/4}Ŧı.ŦèáĖ^rŦ^{o1}ıŦ»ıĀ³ıáĖ^rŦ^{1/4}Ā
«ŦèŞĀŦ»ĀĐáĀ^{a1}ıĀA×èı.ŦŞŦ^{o1}ıŦ^oă»ĀáıĀĀ»ĀĐÁÇĀ^{1/4}ĀĀŦ»ĀŦ^{3/4}
à^{3/4}×èıäĖĖá^réĖŦ.ŦèŦıııéıŦ.ŦèĖŦ^r(ă^aé¹ĀŦ»ŦĖŦĀ)àA×èıáĖ^r
Ŧ^{1/4}Ā^{o1}ıııĀ^{3/4}ŦÇàııĀı
ııı¹Ŧı¹ŦéàıĀ3ĐĖĀŦĀıĀ^rĐĀŦŦŦŦŦáĖ^rŦ^{1/4}Ā.Ŧèıııı¹ÇéŦŞĀ×^r
ıŦĀă^{3/4}ŦèĀııèŦıÇŦĀÊÇèŦŞăĀĐ/ĖA×ıııèŦáıAAŦŦá^{a1}à¹ĀĖŦ.ŦéŞĖĀ
Đ^aèÇĀăĖĖĀŦ^{3/4}ă¹àıĀÊÇèŦŞŦŦé¹ıŦ³ŦŞĖŦĀŦĀŦăĀ¹àıĀă^réŦŦŦé¹

⌘Ø³ÊÒÁÒÃŦàÅ×í:á^{a1}à¹ÅÊÕä´éâÂã^aéáŦ^oàÅ×è¹
·NéŞANŞÊOAOAŦŦ»AN^oá^{a1}à¹ÅÊOáŞÊOàçOÄÇËÃ×ÍÊÕ¹éÓàŞÔ¹ä´éâ
´ÅµAS EA×l»AN^o.NéŞ 3 á^{a1}à¹A^{3/4}AéIA æ ĩN¹ıçă é

Digital Vibrance

·QāEéꞆØ³EOAÖÃ¶C⁰ꞆØÁ;QÃáÂ;ÊÕáÅĐꞆÇÒÁàçéÁçÍÊÕä´éÁÖ;çÖé¹
«Oè§Eè§¹/₄ÃäEéAO³/₄ã¹ál»³/₄AOàꞆ^aN¹.Né§EÁ´AOEÖ·OèꞆA^aN´AOè§çÖé¹

jÃ0¿áÊ´šªèÇšÊÕ àÊé¹âæéš¹Õé·ĐáÊ
·š¼ÄjOÄà»ÄOèA¹á»Äš·N¹·O·Oè²Ø³»ÃÑº²èÒ²ÇÒÁ²ÁªÑ´ ²ÇÒÁÊÇèÒš
EA×l²èOájAAO

j ÒÃàÅ×íjµÑÇàÅ×íj¹Õé`Đ: ÓãĚéÃĐ^{oo}ã^aéj ÒÃµÑé\$µèÒ·ÕèµØ³j ÓĚ¹
`äÇéç³Đ^oUµãµA×èlšâ`ÂlÑµâ¹ANµÔ

ĚÁÒÂàĚµØ:

EOjãµA×èlšµíÁ³/₄ÔÇàµíÃiçlšµØ³·Ó\$Ò¹ÎUèã¹à¹çµàÇÔÃij j ÒÃáĚ¹
`š¹/₄ĀĚÖ`Đà»ĀOèA¹ă»Ā\$ĒĀN\$`Öjă`éAçljl¹àçéOEUEçO¹ă
`ÇĒiăĀéÇ

ÃÒÂ;ÒÃ;ÒÃµÑé§èÒ·ÕèØ³⁰Ñ¹.Ö;äÇé
ãÉéàÃ×l;µNÇàÃ×l;Ö;ÃÖÃ;ÖÃà^{3/4}×èlãÃÖÃ;ã^aé§Ò¹;ÒÃµÑé§èÒ·ÕèµéÍ§
iOA

⌘Ø³ÊÒÁÒÃŧ°Ñ¹.ÖᵢᵢÒÃµÑé§⌘èÒÊÕ»Ñ´·Ø°Ñ¹ăÇéà»ç¹ÃÙ»áº.ÕèᵢÓĚ¹
´àİă´é àA×eİ°N¹.ÖᵢᵢÒÃµÑé§⌘èQáĂéÇ
ĂĐºº.Đ¹O⌘èÖ¹Né¹ă»à»ç¹AOĂᵢOĂµèİ·éÒÂÃÒÂᵢÒÃà´ÔÁ·ÕèÁÕÍÂÙè

Å°ÃÒÂ;ÒÃ;ÒÃµÑé§¤èÒÊÕ·Õèä´éàÅ×Í;äÇé¨Ò;ÃÒÂ;ÒÃ

àÃÕÂ¡¢éíÁÙÅðèÒÊÕ¢í§ðèÒÎÒÃĩ´áÇÃì·ÕèμÑέ§ÁÒ¨Ò¡âÃ§§Ò¹

ãªéàÅ×Í;ãĚÁ´ä·ÁìÁÔèšŒÍš´ÍÀÒ¾

μÑÇàÅ×Í; Auto-Detect ãĚéÇÔ¹â´ÇÊìÃÑºèÒ·ŒèàĚÁÒĐĚÁ´Òì´ÍáĚ
s¼ÅàÍš «ŒèšμÑÇàÅ×Í;¹Œé·Đãªéã»ç¹èèŒ´Œ¿Íμì â»A
·AOºÇèŒ´IAO¾AØè¹à;èOºŒšAØè¹Œ´ãAèEOAOA¶ãªéèØ³ĚÁºÑμÔ¹Œ
éä´é

μÑÇàÅ×Í; General Timing Formula ĚÃ×Í **GTF**
à»ç¹μÑÇàÅ×Í;·ŒèAN;ãªé;NºŒŒAì´áÇÃìÃØè¹ãĚÁè æ

μÑÇàÅ×Í; Discrete Monitor Timings ĚÃ×Í **DMT**
à»ç¹AŒμAºO¹AØè¹à;èŒ·ŒèANšºšãªéã¹ŒŒAì´áÇÃìºŒš»ÃĐàÀ·
ãĚãªéšŒ¹μÑÇàÅ×Í;¹ŒéEO;ŒŒAì´áÇÃìŒÍšºØ³μéÍšãªéãĚÁ´ DMT

à¾ÔèÁäíí¹ NVidia QuickTweak äÇé·Õè·ÒÊìºÒÃìí§ÇÔ¹â´ÇÊì
äíí¹¹Õéãªé;ÓË¹´ÃÙ»áº Direct3D, OpenGL ËÃ×Í;ÒÃµÑé§ªèÒÊÕ
´éÇÂµ¹àí§ "ä´éíÃèOSAC´àAcC" ¨ÖjaA¹U»êl»lÑ»¹l;Öì¹Öé
àA¹U¹ÖéÃÑ§AQQA;QAEÖEÃÑºãªéªèO´ÖçlÃµiáÃĐàAOÔ;ãªéä
lĐÄçl;ªØ³EAºNµO;OAáE´§¹¼Ä'

⌘Ø³ÊÒÁÒÃ¶àÅ×Í;äÍ⌘¹ÊÓËÃÑ°ãªéá.¹ÂÙ·ÔÅÔμÕ QuickTweak
¹.ÔÊìºÔÃì¢Ì§ÇÔ¹â ÇÊìä´é
àÅ×Í;äÍ⌘¹.ÕèμέÍ§;ÒÃάÊ´§¨Ò;ÃÒÂ;ÒÃ¨Ò;¹Ñé¹ ⌘ÅÔ; "μ;Å§" ËÃ×Í
"μ;Å§ãªé" à¾×èÍÎ»à´μäÍ⌘¹¹.ÔÊìºÔÃì

àÅ×Íjâ»Ãá;ÃÁ`Ñ´;ÒÃà´Êjì·Í»¢Í\$ NVIDIA
â»Ãá;ÃÁ`Ñ´;ÒÃà´Êjì·Í»¢Í\$ NVIDIA
`Đ^aèÇÃãÉé;ÒÁ·ÔŜÔ¹ÁÔ»ÃĐÊÔ· ÔÀÔ^{3/4}ÁÔ;ÂÔè\$¢Öé¹ ÍÂèÔ\$à^aè¹
Îµ^µÔÀì;ÒÁ`Ñ´;ÔÃÔ¹â´Ç), ;ÒÁ;ÔÊ¹µÔáÉ¹è\$µÂ\$;ÃÔ\$ãÉé;Ñ^oã
ÍĐÀç; áÃĐ;ÔÃ«UÁ àA×èl^µØ³ã^aé;ÔÃ;ÔÊ¹
´gèÔ^µl¹;Ôà;làA^aN¹ãÉé;Ñ^oÉÃÔÃ`lÃÔ^{3/4}â»Ãá;ÃÁ`Ñ´;ÒÃà
´Êjì·Í»`ĐÊ¹N^oÊ¹Ø¹;ÒÁ·ÔŜÔ¹¢l\$à´Êjì·Í»ÉÃÔÃà´Êjì·Í»
à^{3/4}×èl^aèÇÃãÉé^µØ³`Ñ´;ÒÁ^{3/4}×é¹·Ôè·ÔŜÔ¹ã¹â»Ãá;ÃÁ`Ñ´;ÒÃà

à»Ô´ä´ÍĐĀčlĭ; ÒÃĭÓĚ¹´¤èÒ¤Í¹; ÔàĭÍàÃªÑ¹¢Íšâ»ÃáĭÃÁ´Ñ´ĭ ÒÃà´Êĭ·Í»¢Íš
NVIDIA

ä´ÍĐĀčlĭ; ÒÃĭÓĚ¹´¤èÒ¤Í¹; ÔàĭÍàÃªÑ¹ã¹â»ÃáĭÃÁ´Ñ´ĭ ÒÃà
´Êĭ·Í» Đ¤Çº¤ØĀ; ÑšĭĭªÑ¹áĀĐ¤èÒ·NéšĒĀ´ã¹â»ÃáĭÃÁ´Ñ´ĭ ÒÃà´Êĭ·Í»
ÍĀeOšàª¹ĭŃCàĀ×ĭĭ; ŌĀĭŌĚ¹´µŌáĒ¹èšĒU¹ĀĭĀQš¢Íšä
´ÍĐĀčlĭ ĭ ŌĀàĀ×ĭĭĭµ¤ŌĀĭ áĀĐ¤èŌĭŌĀ´Ñ´ĭ ŌĀâ»ÃáĭĀĀ

»Ô´ä´ÍĐĀçĭ;1ŌéáĀĐ°Ñ1.Öĭ;ÒĀà»ĀŌèĀ1á»ĀšăCé
áμè;ŌĀà»ĀŌèĀ1á»Āš·ĐĀŌ^{1/4}ĀĒĀŊš·Ōĭ;ϰŌ³ϰĀŌĭ "μĭĀš" ĒĂ×Í "μĭĀšăé"
ă1ă´ÍĐĀçĭ; "ϰŌ³ĒĀ°ŊμŌà^{3/4}ŌèĀăμŌĀ"

ãĚé∅³;ÓĚ¹ÇèÒ¨Đãªé»ØèÁã
´ϕİšàAÒĚìàÃŎĀ;àA¹UàA×èİAŎ;ÒÃ∅ÅÔ;·Ŏèăİ∅¹¹¹.ÒĚ;ìºÒÃì

à»Ô´ËÃ×Í»Ô´¢éÍ¤ÇÒÁÂ×¹ÂÑ¹
·Óà¤Ã×èÍËÁÒÂ·ÕèµÑÇàÂ×Í;¹Õé.ËÒ;¤Ø³äÁèµéÍ;ÒÃãËéáÊ
´¢éÍ¤ÇÒÁÂ×¹ÂÑ¹·Ø;¤ÂÑé§·ÕèâÉÁ´¤Í¹¿Ôà;làAªN¹ 3D
“Ô;àÁ¹Û·ÔË;ìºÔÀì

àÅ×ÍµÑÇàÅ×Í¹Öé ËÖᵢ∅³µéÍ§ᵢÒÃáÊ´§¼ÅàÁ¹Ù·ÒÊᵢºÒÃì
´éÇAálççàççµì 3D

μÑÇàÅ×í;¹Õéãªé;ÓĚ¹´μÓáĚ¹è§;ÒÃáÊ´§ÀÒ¾¹´´Íá¹
âA×è;·ÓŠÖ¹·Öè²ÇÓÁĀĐàÍŎÁ´μèŎ;ÇèŎ²ÇÓÁĀĐàÍŎÂ´ÊÛ§ÊØ
´·ÖèĒŎĀŎĀ¶ãªéã´é

ã^aé»ØèÁÅÙ;ÈÃà¾×èÍ»ÃÑ^oμÓáË¹è§¢Í§¾×é¹.Õèà´Êì·Í»^{o1}·íaÊ´§¾Å

ÃŒà«çµðèÒàÊì·Í»à¾×èÍã^aé'Œ¿ÍÅµìŒÍ§ðèÒðÇÒÁÅĐàÍŒÂ
´áÅĐÍÑµÅŒıŒAAŒà¿A^a»N'°N¹

uÑÇàÅ×Í:àËÅèÒ¹Öéãªé;ÓË¹´»ÃĐàÀ·¢Í§ÍØ»jÃ³ìáÊ´§¼₄Å (´ÍÀÒ¾ ´´Íá¹
ÉÅ×ìâ·Ã·NE¹ìâ´A¢Öé¹íAUè;NºíØ»jA³ì·Öè;OÄì´´ÍE¹NºE¹Ø¹)

à»Ô´Ë¹éÒµèÒ§à³/₄×èÍµÑé§¤èÒµèÒ§ æ ¢Í§ÍØ»¡Ã³íaÊ
¸¹/₄Å·Öèã^aé§O¹IAUè

ÃĐ°ØÃÙ»»á^{oo}áÅĐ»ÃĐà·È·Õèã^aé¡ÒÃáÊ´§¼Å·Ò§â·Ã·ÑÈ¹ì

à»Ô´Ë¹éÒµèÒ§à¾×èÍÃÐ°ØÃÙ»á°;ÒÃáÊ´§¼Å·Ò§â·Ã·ÑÈ¹ì

ÃÒÂ;ÒÃ¹ÕéãéàÅ×Í;ÃÙ»áº;ÒÃáÊ
´§¼Ä·Ôšâ·Ä·ÑÉ¹ιμÔÃ»ÃĐà·È·Õè∅³ÍÂÙèÍÒÈÑÂ
ĚÁÒÂaĚμ∅: ĚÒ;»ÃĐà·È·Õè∅³ÍÂÙèäÁè»ÃÒ;ĴÂÙèã¹ÃÒÂ;ÒÃ
ãĚéaÅ×Í;»ÃĐà·È·ÕèÍÂÙèã;Áé»ÃĐà·È·Õè∅³ÍÂÙèÃÔ;ÕèĚ∅´

ıÖĖ¹ãĖĖĀŬ»á^{oo}.ŌèàĀ×ıĭà»ç¹ĀŬ»á^{oo}.Ōèã^aéàĀ×èĭà»Ō´àσĀ×èĭs
àĀ×èĭà»Ō´àσĀ×èĭsıĀ^{3/4}ŌCàıĭĀi.Ōèà^a×èĭĀıèĭĀ.Ā.ŊĖ¹ıāçéŌ;Ŋ^oıŌĀi^{ıı}
ıŊCĀĀ×ıĭ¹ŌĖ^aĖCĀãĖĖĀŊĖ¹ã^ıā^ıēçĖŌçéĭσCOA.ŊĖSEĀ.ŌĖāĖ^ı
s^{oı}^ııĀŌ^{3/4}ĀĖĖçĖŌsıĀĖ^oç¹ıŌĀ^oıı^ıĖ»ĀŌı^ııā.Ā.ŊĖ¹ıĀĖŌsııııēĭs

ã^aé;ÓË^{1'}_{a1}Ô´çİŞÊÑÒ³àÍÒµì³/₄Øµ·ÕèÊè§¹/₄èÒ¹ä»ÂÑşâ·Ã·ÑÈ¹ì
ËÒ;¤Ø³ă´éà^a×èÍÁµèÍÁ·Âă^aéÊÒÂà¤à^oÔÂ·ÕèŦÙ;µéİş^{a1}Ô´ÊÑÒ³á^{oo} S-
Video out·ĐăÊé¤Ø³AO³/₄ÊUş;ÇèÖÊÑÒ³á^{oo} Composite video out
ËÒ;¤Ø³ăAèá¹èă´à;ÖèAÇ;N^{oa1}Ô´çİŞÊÑÒ³ăÊéàÂ×Í; **Auto-select**

ã^aé»ØèÁÀÙ;ÈÃ»ÃÑ°μÓáĚ¹èšà´Ê;ì·Í»^{o1}·Íâ·Ã·ÑÈ¹;

ĚÁÒÂàĚμØ:

ĚÒ;ÀÒ^{3/4}ã¹â·Ã·ÑÈ¹;ĀéÁĚÃ×ĭăÁèÁŌÀÒ^{3/4}à¹×èÍš·Ò;ĭ;ÒÃ»ÃÑ°μÑés
ãĚéĀI»AĐAO³ 10 ÇÔ¹Ō·Ō ÀŌ^{3/4}·Đ;ĀN°AOáĚ
·š^{1/4}·Ā·ŌèμOáĚ¹èš·Ōèà»ç¹·Ō;ĬĀμĭă·ĀNμâ¹ĀNμÔ
··Ō;ĭ¹Né¹μØ³ĀNšĚOAOĀ·ĭăĀŌèĀ·Ō;ŌĀ»ĀN°μNésμèÒãĚÁèĬŌ;μĀÑ
és ĚĀNš·Ō;ĭ;ŌĚ¹·μOáĚ¹èšçĬšà´Ê;ì·Í»áÁéÇ μØ³μéÍšμĀŌ;Ōè»ØèA
"μĭĀš" ĚĀ×Ĭ "μĭĀšã^aé" à^{3/4}×èĬ^oN¹·Ō;μèOAOĀã¹àÇĀŌ 10 ÇÔ¹Ō·Ō

ÃŒà«çµà´Êì·Í»ä»ÂÑ§µÓáË¹è§´Œ¿ÍẢµìº¹â·Ã·ÑÈ¹ìâ´Âãªé¤ÇÒÁẢĐàíŒÂ
»N'''ØºN¹

ã^aéµÑC⌘C^o⌘ØÁàËÀèÒ¹Õéã¹¡ÒÃ»ÃÑ^o⌘ÇÒÁÊÇèÒ§áÅĐ⌘ÇÒÁÍÔèÁµÑÇ¢
Í§EO¢Í§AÖ¾ã¹â·A·NE¹ì

ãªéµÑÇ¤Çº¤ØÁàËÀèÒ¹Õéã¹;ÒÃ»ÃÑº¤ÇÒÁÊÇèÒ§áÅĐ¤ÇÒÁ¤ÁªÑ
´ϕISO¾¼ã¹â·A·NE¹ì

ã^aéµÑÇᵂC^oᵂØÁ¹Õéà¾×èÍ»ÃÑ^o¿ÔÅàµÍÃìÅ
´iOAÊÑè¹¢ÍSAO¾·OèµéÍ§iÔÃã^aéiN^oâ·A·NÈ¹i
¢Íá¹Đ¹ÓãËéᵂØ³»Ô´¿ÔÅàµÍÃìÅ´jÒÃÊÑè¹¢ÍSAÒ¾àÁ×èÍàÅè¹ÀÒ¾Â¹µÃì
DVD ¨Oj|Ø»iA³i¶I´ÃÊNÈ¢Í§IOAÍ´áÇÀì

jÓË¹ ¢ÇÒÁÂĐàİÕÂ´ ¢İ§´İáÊ´ §¼¼ÁáÂĐÃĐ´ Ñ°ÊÕă¹; ÒÃáÊ
§¼¼Â·Õ§´İâ·Â·ÑÊ¹İ

ã^aéµÑÇꣳÇ^oꣳØÁàĚĚèÒ¹Ōéã¹ǝŌÃ»ÃÑ^oꣳØ³ÀÒ³/₄ŦİŜĚÑÒ³ÇÔ´ŌâĚĚ×Í
DVD ^{o1}·ÍĀŌ³/₄

ꣳØ³ĚÒÁÒÃǝꣳÇ^oꣳØÁꣳèÒꣳÇÒÁĚÇèÒŝ ꣳÇÒÁꣳÁ^aÑ´
ꣳèÒꣳÇŌĀĬŌèĀµÑÇŦİŜĚŌà³/₄×èĬꣳØ³ĀŌ³/₄ǝŌĀáĚ´ŝ¹/₄Ā·Ōè
´ŌāĀ×èĬāĀè¹ĀŌ³/₄Ā¹µĀİ DVD ã¹àꣳĀ×èĬŝĀĀ³/₄ŌÇāµĬĀİ

⌘Ø³ÊÒÁÒÃ¶»ÃÑº⌘ÇÒÁ¶ÕèÊÑÒ³¹ÒìÔ¿ÒËÃÑ¿áÅĐÊÑ-
Ö³¹ÖìÖ¿Ö¿İŞĖ¹èÇÃ¿ÇÔÁ·Ö¿İŞâ»Ãà«Ėà«ĬÃì¿AO¿Ö¿¿İŞ NVidia ä´é

μÑέξϣèÒϣÇÒÁàÃçÇϕÍŜÊÑ-
O³¹OÍÔıOĖĖNıϕÍŜă»Ăà«Ėà«ÍĂı;ĂÔ¿Ôı NVidia

ÃĐ°ØƙÇÒÁàÃçÇÊÑÒ³¹ÒÌÔ;ÒËÃÑ;à»ç¹àÁ;ĐàÎÔÃµ«ì

jÓË¹ ¢ÇÒÁàÃçÇÊÑÒ³¹ÒìÔ;Ò¢Í§ÍÔ¹àµÍÃìà¿«Ë¹èÇÂ¢ÇÒÁ¨Ó¹;ÒÃĩ´áÊ
§¹⁄₄Å

ÃĐ°Ø¤ÇÒÁàÃçÇÊÑ-
Ö³¹ÖİÖıÖ†İŞİÖ¹âıİÀìàç«Ë¹èÇÂ¤ÇÒÁ¨Óà»ç¹àÁıĐàİÔÃµ«ì

.´Êí°¤ÇÒÁàÃçÇÊÑÒ³¹ÒìÔ;ÒãËÁèà^{3/4}×èí.
´Êí°àÊ¶ÒÁÁÁÒ^{3/4}¢Í\$ÃĐ⁰⁰íêí¹ã^aé\$Ò¹´´ÁÔ\$
ËÁÒÂàËµØ: ¤Ø³µéí\$.´Êí°;ÒÃµÑé\$¤èÒãËÁè«Öè\$äÁèã^aè¤èÒ
´Ö¿ÍÁµì¢Í\$^{1/4}Ué^{1/4}ÃÔµ;êí¹.Öè´´Đã^aé¤èÒ¹Ñé¹µÁí´ã»

¡;OÀàÀ×¡µÑÇàÀ×¡¹QéªèÇÃãÉéÁÑè¹ãªª´éÇèÒ
¡;OÀà»ÀOèÁ¹µÇOÀ¡OèENO³¹O!O¡OªDAO¹¼ÀãªesÒ¹ã
ÁINµâ¹ANµO·Ø¡µANés·OèàAOèÁãªesO¹ÇO¹ãÇÈì
ÈÁÒÀãÈµØ: µØ³ÈÒÀÒÃ¡µéÒÀÇÑé¹µ!¹¡;OÀµÑésÊÑ-
O³¹O!O¡O¡O¡Nµâ¹ANµO·Oè·OŠO¹Ç³ÐàAOèÁµé¹AÐªªª´éª
ª¡;OÀ¡µOÀì<Ctrl>ªéOŠàCéÇ³Ð·OèCÓ¹ãÇÈì¡OÀNSàAOèÁ·ÓŠO¹
ÉO¡àµA×èìŠµ!A¾¼QÇàulA¡ªª×èlAµèl!AÙèìNªª¹cuaCOAìªãÉé¡µOÀ
ì<Ctrl>ªéOŠàÇé·N¹·OÉANSªO¡ª´éAçl¡l!¹ãéOÈUèÇO¹ãÇÈì

ÃÕà«çμÊÑÒ³¹ÒìÔ;Ò·ÑésËÁ´ áÅéÇãËéÃĐ^{oo}μÃÇ·ÊÍ°îÒÃì
´áÇÀì;ÃÔ¿Ô;ìèì¹·Ôè·Đã^aéŞÔ¹μNÇ^đÇ^oμØA·Ôè;ÔË¹´äÇéÍÔ;μÃÑés
¢Íá¹Đ¹ÓãËéμØ³ÃÕà«çμ·Ø;μÃÑés·Ôèá¿Å^a BIOS ¢ÍŞ;ÔÃì´´Í â
´Aã^aéä¿ÃìÔAãA·ËOEAN^oÍN»à´μ BIOS

⌘Ø³ÊÒÁÒÃ¶àÅ×Í;âĚÁ´ TwinView ä´é¨Ò; 4 âĚÁ´´ŃŞµèlä»¹Ōé

Standard – âĚÁ´; ÒÃáĚ´ §¼ÅáººÁÒµÃºÒ¹ã¹Ě¹éÒ¨là´ŌÂÇ

⌘Ø³ÊÒÁÒÃ¶ãªéâĚÁ´¹Ōéã¹; Å³Ō·ŌèÁŌÍØ»Í; Å³Í; ŌÃáĚ´
´§¼Å·Ōèµèl; Nº; ŌÃ¨¨Í Nvidia à¾ŌÃŞÍÃèŌŞà´ŌÂÇ

Clone –âĚÁ´¹Ōé¨Đ·ŌãĚé¨làĚ´ §¼ÅÃÍŞáĚ´ §¼ÅµÒÃĚ¹éÒ¨ÍĚÃŃ;

Horizontal Span – âĚÁ´¹Ōéãªéã¹; ÒÃŸÂÒÃà´Ěì·Í»ŸÍŞÇŌ¹â

´ĈĚİä»ANŞ¨làĚ´ §¼Å 2 Ě¹éŌ¨là¹á¹Ĉ¹Íä´é ã¹âĚÁ´¹Ōé¨làĚ´
´§¼Å·ŃéŞĚÍŞ¨Đãª×èlAµèl; N¹à»ç¹³¼×é¹·Ōè; ŌÃáĚ´ §¼ÅŸ¹Ō´ãĚ-
èà¾ŌÃŞ¨là´ŌÂÇ

Vertical Span – âĚÁ´¹Ōéãªéã¹; ÒÃŸÂÒÃà´Ěì·Í»ŸÍŞÇŌ¹â

´ĈĚİä»ANŞ¨làĚ´ §¼Å 2 Ě¹éŌ¨là¹á¹ĈµŃéŞä´é ã¹âĚÁ´¹Ōé¨làĚ´
´§¼Å·ŃéŞĚÍŞ¨Đãª×èlAµèl; N¹à»ç¹³¼×é¹·Ōè; ŌÃáĚ´ §¼ÅŸ¹Ō´ãĚ-
èà¾ŌÃŞ¨là´ŌÂÇ

TwinView Standard - àÅ×Í;âËÁ;ÒÃáÊ´§¼Å°ÁÒµÃ°Ò¹ã¹Ë¹éÒ´Íà´ÕÂÇ
¤Ø³EOAOA¶ãªéâEA´¹Oéã¹;A³O·OèAOÍØ»;A³;í;ÒAáÊ´§¼Å·Oèµè;N°;OAì
´´I Nvidia à¾OA§IAèO§à´OAC

TwinView Clone - äÄ´¹Öé¨Ð·ÓãËé¨íaÊ´§¼ÅÃísáÊ
´§¼ÅµOÄË¹éO¨ÍEÄÑ¡

[illegible]

[illegible]

ÀÒ¾¼¡ÃÒ¿Ô¡µÒÁ¤èÒ¤Í¹¿Ôà¡làÃªÑ¹¢Í§¡ÒÃáÊ´§¹¼Åª¹âËÁ´ TwinView
¡ÒÃ¤ÅÔ¡ÀÒ¾¼¡ÃÒ¿Ô¡¹¹´´ÍÀÒ¾¼´´Ðà»¿¡ÒÃà×Í¡ãËé´´ÍáÊ´§¹¼Å¹Ñé¹à»¿´´ÍáÊ
´§¹¼Å»Ñ´´ØºN¹¢Í§¤Ø³àÁ×èÍ¤Ø³¤ÅÔ¡¢ÇO¹ÅO¾¼¡AO¿Ô¡·Òè´´ÍAO¾¼
¤Ø³´ÐàË¹ÅÔÂ¡OÃµèO\$æ
·Òè¤Ø³EÖAOÃ¶¡»ANºà»ÅOèÂ¹ãËé¡ÑºÍØ»¡Ã³¡¡ÒÃáÊ
´§¹¼Å·Òèà¡ÒèAÇ¢éÍ§¡N¹

ËÒjã^aéâËÁ´ Clone ¢Ø³´ ÐÊÒÁÒÃŦjÓË¹´jÒÃáÊ
´s^{1/4}Ãã¹Ê¹éO´ÍÊÂNjãÊéAÖ¢èO¢COAÃÐàIOA´¢Ísà
´Êjì·l»AOjìCèOã¹Ê¹éO´ÍAÍs ÊOjìèO¢COAÃÐàIOA´¢Ís´ÍáÊ
´s^{1/4}ÃAÍs¹éIÄjCèO¢COAÃÐàIOA´¢Ís´ÍáÊ´s^{1/4}ÃÊÂNj·à´Êjì·l»¢Ís´ÍáÊ
´s^{1/4}ÃAÍs´Ðá^{3/4}¹àÍsâ´ÁINµã¹ANµOàA×èl¢Ø³ãA×èl¹àAOËIä»ÊØ¢Í⁰´I

Â;àÀÔ;î ÒÃã^aé^ø³ÊÁ°ÑµÔ;ÒÃã^¾â´ÂÍÑµâ¹ÁÑµÔã¹´´ÍáÊ´§^¼ÃÃÍ§ ËÒ;ä
´éàÃ×Í;µÑCàÃ×Í; "ã^aéà´Ê;ì·Í»àÊÃ×Í¹´AÔ§;N°´ÍáÊ´§^¼ÃÃÍ§ã´é" äCé
«Òè§´Ð·ÔãÊéà´Ê;ì·Í» "ÊAØ´;ÒÃ·Ó§O¹" ã¹µÓáÊ¹è§ã´µÓáÊ¹è§Ê¹Òè§
ø³ÊÁ°ÑµÔ¹ÒéàÊAÔÐÊOÊÂN°;ÒÃ¹ÒàÊ¹Í§O¹ã¹áÍ»^¾ÃOà^øN¹·Òéã^aé^øÇ
ÒAÃÐàÍÒÃ´ã¹;ÒAáÊ´§^¼ÃÊU§

jÒÃã^aé§Ò¹⌘Ø³ÊÁ^ºÑµÔ¹Õé"ĐĂçí⌘µÓáĚ¹è§jÒÃá^{¾1}»Ñ""Ø^ºÑ¹çí§"íaÊ
§^{¼1}Ā·ŌèàĀ×lǐăCéã¹ç³Đ¹Ōé «Ōè§Đ·ŌãĚèà'Ějì·l» "ĒĀØ'jŌĀ·Ō§Ō¹"
ã¹µŌáĚ¹è§ã'µŌăĚ¹è§Ē¹Ōè§
⌘Ø³ÊÁ^ºÑµÔ¹ŌèàĒĀŌĐĒŌĒĀÑ^ºjÒÃ¹ŌàĒ¹í§Ò¹ã¹ái»¾1ĀŌà⌘Ñ¹·Ōèã^aé⌘Ç
ŌĀĀĐàlŌĀ'ã¹jŌĀăĒ'§¼1ĀĒU§

ã^aé§Ò¹∅³ÊÁ⁰ÑμÔϕÍ§à´Êì·Í»àÊÁ×Í¹··ÃÔ§ã¹âËÁ´ìÒÃϕÂÔÂÀÒ³/₄ϕÍ§
TwinView
ìÒÃã^aé§Ò¹∅³ÊÁ⁰ÑμÔ¹Õé¹·Đ·ÓãËé∅³μÑé§∅èÒà´Êì·Í»ãËéÁÕϕ¹Ò´ãË-
èìÇèÒ´ÍáÉ´§¹/₄··Õèà^a×èìÁàϕéÓ´éÇÂìÑ¹
ÇÔÇ·Õèà^a×èìÁμèìàϕéÒ´éÇÂìÑ¹··Đ»ÃÒì·ãËéàËç¹μÁ¹·³/₄×é¹·Õèà
·Êì·Í»·ÕèãËèçÖé¹ àA×èì∅³/₄··ÔÔÔÔAaA×èì¹àAÔËììì··Òì³/₄×é¹·Õè·ÕèáÊ
·§

ÀÒ¾¼¿ÃÒ¿Ô¿µÒÁ¤èÒ¤Í¹¿Ôà¿làÃªÑ¹¢Í§¿ÒÃáÊ´§¼¼ÅÃÍ§ã¹âËÁ´ TwinView
¿ÒÃ¤ÅÔ¿·Õè¿ÃÒ¿Ô¿·Ð·ÓãËé¤Ø³ÊÒÁÒÃ¶µÑé§¤èÒÍØ»¿Ã³¿¿ÒÃáÊ
§¼¼Å«Ôe§µè¿¿Nº¿láÊ´§¼¼ÅAÍ§·Ôèãªé¿ÔAì´¿I·ÔèáÊ´§¼¼Åªºº TwinView ä´é
ã¹¢³Ð·Ô§O¹IAUèâËÁ´ Clone

jÓĚ¹
ã^aé;ÒÃꝛC^oꝛØÁ;ÒÃ«ÙÁà³/₄×èíãĚéÊÒÁÒÃ¶«ÙÁàꝛéÒă»ÂÑŒĚ¹éÒ^ˆÍ;ÒÃá
Ê^ˆŒ¹/₄Ä·ŒěméłŒ;ÖÄä^ˆé

ã¹âĖÁ¹Ōé ¢Ø³ÊÒÁÒÃ¶àĀ×Ĵ;¾×é¹.ŌèĖ¹éÒ¹ĴÊèÇ¹.ŌèµéÍ§ĴÒÃ«ÙÁ
ĖĀNŠ¹ÒĴàĀ×ĴĴáĀéÇ ¢Ø³ÊÒÁÒÃ¶«ÙĀă»·ŌèĖ¹éŌ¹ĴÊèÇ¹¹Né¹ă¹é·N¹.Ō â
ĴĀĀ×èĴ¹µNÇĀĀ×èĴ¹éŌ¹ĀèŌ§

ãËéøø³ÊÒÁÒÃ¶àÅ×Í¡ÒÃ«ÙÁà¢éÒËÃ×ÍÍ¡ã¹ÊèÇ¹¢Í§Ë¹éÒ´íaÊ
§¹⁄₄Å·ÕèàÅ×l¡äÇé

àÅ×Í;ÍØ»;Ã³;ÒÃáÊ´§¼ÅÊÓËÃÑº;ÒÃáÊ´§ÀÒ¾ã¹âËÁ´;ÒÃáÊ´
§¼ÃáºµçÆ¹éÖ·Í

ø³ÊÒÁÒÃŕàÅ×íĵÊÑ´ÊèÇ¹çÍ\$ÀÒ¾ (ç¹Ò´ã¹á¹Ç¹í¹µèíá¹ÇµÑés)
ÊÔÊÃÑºĵÔÁáÊ´\$¼ÁáººàµçÆ¹éÔ´Í

jÒÃã^aéşÒ¹µÑCàÅ×Íj¹Õé`Đ·ÓãĚéä´ÃàCÍÃìjÒÃáÊ´ş^{1/4}ÂÊÒÁÒÃ¶jÓĚ¹
æèOꞤÇÓÁĀĐǎlŌĀ´·ŌèàĒÁŌĐĒA;N⁰jŌAáÊ´ş^{1/4}Āá⁰⁰ăµçĀĒ¹éÔlă´é

ıÖÃã^aéŞÖ¹µÑÇàÅ×Íı¹ÖéˆĐà»ç¹ıÖÃà^a×èÍÁâÂŞıÖÃ^ıÇ^{0ı}ØÁıÖÃ«ÙÁã¹Ë¹é
ÖıÖÃ^ıÇ^{0ı}ØAâlàÇÍÀàÁÀııN^{0ı}ÖÃ^ıÇ^{0ı}ØAıÖA«UÁã¹ıÖAáË
ˆS^{1/4}Áá⁰⁰ãµçAE¹éO`lă`éã¹¢³Đà`ÖAÇıN¹

jÒÃ¸ÅÔj.Õè»ØèÁ¹Õé¨Đ·ÓãĚéãªésÒ¹¸Ø³ÊÁºÑµÔj:ÒÃáÊ´§¼Å¢Ñé¹ÊÙšâ
ĤÃªéâĤÁ´ TwinView Clone â»A´ĚNšàµÇèOµéłšãªésO¹âĤÁ´ Clone
ÍAUè¨Œ§¨Đà¢éOãªé¸Ø³EAºNµOàĤÁèO¹Œéã é

jÒÃã^{aé}šÒ¹µŃÇàĀ×Í;¹Ŏé^{ˆˆ}Đà»ç¹iÒÃjÓĚ¹
ãĚé«l;µiáÇĀiālàÇĀiàĀĀiàĀŎĀ;ã^{aé°}ŃĒÁŎĒàµíĀiĀŎš
ăĀèá¹Đ¹ŎãĚéçØ³ăĀ×ÍµŃÇàĀ×Í;¹Ŏé à^{3/4}ĀŎĐ^{ˆˆ}Đ·ŎãĚéàjÔ´»Ń-
EQã¹jŎĀãĚ šĀŎ^{3/4°1}j ā^{aé1}ăĚ
ˆšĀŎ^{3/4}ăĀè¶UjµéİšĒĀ×lăĀèĀŎĀŎ^{3/4}»ĀŎj^ˆčŎé¹ăĀĀ

áÊ´§ª¹Ô´¢Í§¨ÍÀÒ¾·Õè¤Ø³;ÓÃÑ§ãªé;Ñº;ÒÃì¨Í·ÕèàÅ×Í;äÇé

▯ÅÔ;à¾×èÍáÊ´§▯Ø³ÊÁ°ÑμÔϕÍ§ä´ÃàÇÍÃìáÅĐÍØ»;ĩ³ĩÊÓËÃÑ°·ÍÀÒ¾¹Õé

áÊ´§ÍÑµÃÒ;ÒÃÃÕà;Ãª·ÑéŞĚÁ´·Õèãªéä´é;Ñº·ÍÀÒ¾¹Õé
ÍÑµAO;OAAQà;Aª·ÕèÁOꞤCOA¶OèEUS¢Oé¹·ĐẢ
ÍÑµAO;OAENE¹¢İSAO¾¹E¹éO·İ

ÃĐ°ØÇèÒÃÒÂ;ÒÃã¹ ¢ÇÒÁ¶Õèã¹;ÒÃÃÕà;Ãª ¨ĐÃÇÁâĚÁ
´·Oè¨İAO¾¹OéãAèã´éĚ¹NºE¹Ø¹İAUèĚA×İăAè ;QAàÃ×İ;âĚÁ
´·OèãAèàĚAOĐĚA;NºİAO¾¹ÇİS¢Ø³İº·OãĚé;O´»N-
ĚOAéOAáAŞã¹;OAáE´S¼ĚĚĐİO·OãĚéİOAİ´áÇAİÇİS¢Ø³àĚÕÂĚÒÂ

μÑÇàÅ×Í;¹Õé;ÓĚ¹ ãĚéä´ÃàÇÍÃì OpenGL ãªéºÑ¿à¿ÍÃìÒÃáĚ´šÀÒ¾ 3
ÁÔμÔáº 16 °Ôμâ´ÂäÁèªÓ¹Õš¶ÖšÃÙ»áººÇÍš¾Ô;à«Å·ÕèáÍ»¾ÅÔàªÑ¹ä
´éàÅ×Í;äÇé

μÑÇàÅ×Í;¹Õé´ĐªèÇÂà¾ÔèÁ»ÃĐĚÔ·,ÔÀÒ¾ÇÍš;ÒÃ·ÓšÒ¹áÅĐ;ÒÃÅºÇéÍ
ÅUÃã¹ºÑ¿à¿ÍÃìÒÃáĚ´šÀÒ¾ 3
ÅÔμÔ·ÕéÅÔªÇÔÃ¶U;μéÍšã¹;ÔÃà;çºÇéÍÁÙÅ¹éÍÂ

àÁ×èí;ÓË¹ãªé§Ò¹μÑÇàÀ×Í;¹ÕéáÅéÇ OpenGL ¨Đãªé¤Ø³ÊÁºÑμÔ
Advanced Multi-Monitor ¢Í§ Windows2000

⌘Ø³ÊÒÁÒÃŒãªéµÑÇàÅ×Ĳ¹Œéã¹;ÒÃàÅ×Ĳ;ÇèÒ·ĐãĚé·ÍáÊ´§¼Åã´áÊ´šà
´ĚĲ·Ĳ»ã¹AØA⁰¹«éOÃĚQèš·ŒèàĚç¹ă´éªN´·ŒèÊØ
´ã¹;ŒAàÅ×Ĳ;µÑÇàÅ×Ĳ¹Œé;ç⌘×Ĳ;ŒAãĚ
´§¼A·Đà»AŒèA¹µŒáE¹èšŒİšAŒ¾ã¹E¹éÒ·Í

ã¹¢³Ð¹Õé ãĚéáĚ´š´íáĚ´š¼Å¢íš TwinView :ÑéšĚÁ´
ĚŌ;µØ³µèlØ»;Ā³iäÇéAO;ÇèOE¹OèšIAèŌšáĀÐµØ³ă éà»ĀŌèĀ¹ăĚÁ
ĵŌĀăĚ´š¼Āà»ç¹ăĚÁ´ăĵµŌĀ·ŌèăAeăªèăĚÁ´ Standard
µØ³µélsăĀ×l;ÇèŌ´ĐăĚ´š¼Ā·Ōè´lă´
¹ĵ;Ō;¹Ōé
µØ³ĀÑšĚŌĀŌĀŋµĀŌĵ;ĀŌ;Ōĵ·Ōè»ĀŌ;ŋ¹ĵĀŌ¾ă¹µÑŌµŌµØĀ´éŌ¹Ō¹ă
´éă´ĀµĀšă¾×èlăĀ×l;ăĚéáĚ´š¼Āă¹´Ī·ŌèăĚ´šĪĀUèă¹¢³Ð¹Ōé

ꞡÅÔ¡»ØèÁ¹Õéà¾×èÍµÑé\$ꞡèÒËÃ×ía»ÅÕèÂ¹¡ÒÃµÑé\$ꞡèÒ¢Í\$ÍØ»¡Ã³¡¡ÒÃ
áÉ´\$¼Å«Òè\$ãªé¡Ñº·ÍáÉ´\$¼Å»Ñ···ØºN¹

j ÒÃ Ç ¢ Ø Á ; ÒÃ á ³/₄ ¹ã^aé ; Ó Ë ¹¢ ¹Ò ¢ Í § ³/₄ × é¹ . Õ è Ë ¹é Ò ¨ Í . Õ è ¨ Ð Ê Ò Á Ò Ã ¶ ´ Ù ä
éã Ê é Ê Ñ Á ³/₄ Ñ¹ ì ; Ñ ⁰³/₄ × é¹ . Õ è à ´ Ê ì · Í » ¨ Á Ò § . Õ è Á Ò Í Á Ù è
« Õ è § ¨ Ð ã^a éã¹ ; Ò Á á Ê ´ § ¹/₄ Å à ´ Ê ì · Í » « Õ è § Á Ò ¢ ¹Ò ´ ã Ê è ; Ç è Ò » ; µ Ô · Õ è á Ê ´ § ä
´ éã¹ ¨ Í Á Ò ³/₄ ¨ Í á⁰¹ Ê Á × Í ´ Í · Õ Ç Ò

ꞡÅÔ;à³/₄×èíμÃÇ¨Êí°¨ÍáÊ´§¹/₄Å·ÑésĚÁ´·ÕèμèÍà^a×èÍÁà¢éÒ;Ñ°;ÒÃì¨Í
ãĚéã^aéꞡØ³ĚA°ÑμO¹QéEO;ꞡØ³àEOÂ°»ÅNê;à¢éO;N°¨ÍáĚ
´§¹/₄ÅĚÅN§¨O;·Oèà»O´ꞡl¹â·ÅÅ³/₄Oà¹Å¢Oé¹AOáÅéÇ

.ÓàᵂÃ×èİŚĖÁÒÂ.Ōèªèİ§¹Ōé
ĖŌ;ᵂØ³àª×èİµèİ'İÄŌ¾à¢éŌ;Ñªªèİ§àĖŌÂªİáĖ'§¼ÅÃİ§«Ōè§äÁèä
´éµÄĊ'ĖİªİÄŪēã¹¢³Đ¹Ōé
İŌÄ.Ōàªè¹¹Ōé'Đà»¢¹»ÄĐâÂª¹İµèİ'İÄŌ¾ÄØè¹à;èŌ
ĖÄ×İ'İÄŌ¾.Ōèªª×èİµèİ;Ñªªèİ§àĖŌÂª BNC

⌘ÅÔ;à³/₄×èíàϕéÒ´ÙϕéíÁÙÅ·Õèà;ÕèÂÇϕéí§;ÑºÍĐá´»àμíÃì;ÒÃì´´Íϕí§
NVIDIA

▯ÅÔ;à¾×èíà¢éÒãªé▯Ø³ÊÁºÑμÔà¾ÔèÁàμÔÁ¢Í§;ÒÃŸ´´Í¢Í§ NVIDIA

⌘ÅÔ;à¾×èíà¢éÒ´Ù¢éÍÁÙÅáÅĐă´ÃàÇÍÃìÃØè¹ÅèÒÊØ´¢Í§;ÒÃì
´´Í·Ôèà»ç¹¢Í§ NVIDIA ã¹àÇçºă«μì¢Í§ ÑVIDIA

ϕέíÀÙÅ¹Õé¨ĐãĚéÃÒÂÅĐàíÕÂ´à;ÕèÂÇ;Ñ°íÒÃĩ´áÇÃìϕí§;ÒÃì
¨í·ÕèàÅ×í;äÇéã¹ϕ³Đ¹Õé

¢éíÁÙÅ¹Õé¨ĐãĚéÃÒÂÅĐàíÕÂ
´à;ÔèÂÇ;Nº¢éíÁUÅ¢íSADºº.ÔèàÅ×Í;äÇé«ÖèSÊèS¼Åµèí»ÃĐÊÔ·,ÔÀÒ¾
¢íS;ÃÖ¿Ô;â ÅAÇA

μÒÃÒ§¹Õéꞡ×ÍÃÒÂ¿ÒÃä¿Àì
áÀĐꞡéÍÁUÃàÇÍÀìªNè¹.Öèà¿ÖèÂÇꞡéÍ§¿Ñ¹.ÕèÁÕ¿ÒÃãªé¿Ñº¿ÒÃì
“Íã¹ꞡ³Đ¹Öé

Ë¹éÒ; ÒÃµÑé§µèÒ ; ÒÃ^ˆÑ^ˆ; ÒÃáí»³/₄ÃÔàµ^aÑ¹ ã^aéã¹; ÒÃ^ˆÑ^ˆ
‘CÔşµÔáE¹è§çİŞE¹éOµèÒŞáí»³/₄ÃÔàµ^aÑ¹AĐĖÇèÒŞ^ˆÍáÉ^ˆ §¹/₄ÃáÃĐà
‘Ė;ì·İ»ĖÃÔÃ^ˆİ â^ˆ AµÑé§µèÒ·ÔÃĐáí»³/₄ÃÔàµ^aÑ¹’

ÃÒÂ;ÒÃ¹Õé¤×ÍÃÒÂ;ÒÃáí»¾ÅÔà¤ªÑ¹.Õèâ»Ãá;ÃÁ·Ñ´;ÒÃà´Ê;ì·í»·Ñ
´;ÔÃÍÀUèã¹¢³Ð¹Õé
àÃ×Í;áí»¾ÅÔà¤ªÑ¹·Ò;ÃÒÂ;ÒÃà¾×èÍµÑé§¤èÒ¤Í¹;Ô;Ô;ÒÃ·Ñ
´;ÔÃáí»¾ÅÔà¤ªÑ¹ á;éä¢ÀÒÂ;ÒÃâ´Ãªªé»ØèA "à¾ÕèA" áÃÐ "ÃºÍ;"
·ÕèÍÀUè·Õ§¢ÇÒ

j´»ØèÁ¹Õéà¾¼×èíà¾¼ÔèÁâ»ÃájÃÁáí»¾¼ÅÔàªªN¹áººãËÁè¢Í§ÃÒÂ¡ÒÃáí»¾¼
ÅÔàªªN¹.Ôèâ»ÁájAA¨N´¡OAà Ê¡·l»¨N´¡OAÍÂUè

j´»ØèÁ¹Õéà¾×èÍÀ°áí»¾ÀÔàª¹.ÕèàÀ×íäÇéã¹¢³Ð¹ÕéÍí;¨Ò;ÃÒÂ;ÒÃáí»
¾ÀÔàª¹.Õèâ»Áá;AA¨N´;OÃà´Ê;ì·l»¨N´;OÃIAUè

j´»ØèÁ¹Õéà¾¼×èÍĀºáí»¾¼ĀŌàªªÑ¹.ÑéſĚÁ´Íj¨¨ÒjÃÒÂjÒÃ
ªÓàµ×í¹: jÒÃj´»ØèÁàĚĀèÒ¹Õé¨Đà»ç¹jÒÃÃŌà«çµjÒÃµÑéſªèÒ·ÑéſĚÁ
´.ŌèªØ³ă éjŌĚ¹´ăÇéĖŌĖĀÑºáí»¾¼ĀŌàªªÑ¹

jÒÃàÅ×ÍjµÑÇàÅ×Íj¹Öéà»ç¹jÒÃjÓË¹
ãËéË¹éÔµèÔ§Í§áí»¾ÅÖàªªÑ¹»ÅÖj⁻çÖé¹ã¹´íaÊ´§¼Å·ÖèªØ³ä´éjÓË¹
´äÇéàÉAI

¿ÔÅ´ì¹Õé"ĐÃĐ°ØÇèÒ"ĐáÊ´şáí»¾ÅÔàªÑ¹.Õèä
´éàÅ×lᵢäÇéã¹¢³Đ¹Õéã¹"íaE´ş¼Å("IAO¾)´Íã´EOᵢä
´éàÅ×lᵢµNÇàÅ×lᵢ"àAÕèAà»O´ãªeşO¹ái»¾ÅÔàªÑ¹ã¹Ë¹éÒ"ÍËÁÒÂàÅ¢"
äÇé

Èò;∅³àÀ×ì;µÑCàÀ×ì¹Ôé â»Ãá;ÃÃÑÑ;òÃàÊì·Í»·ÐµÔ´µòÁ¢¹ò
 àÀÐµÔáÊ¹é§µÇìÊ¹éÔµèÔsál»¾¼ÀÒàªªÑ¹¹Ôé
 àÀ×èì∅³àÀÔèÀµé¹ãæ§Ô¹ál»¾¼ÀÒàªªÑ¹ â»Ãá;ÃÃÑÑ;òÃàÊì·Í»·Ð;ÔË¹
 Ê¹éÔµèÔsál»¾¼ÀÒàªªÑ¹¹ÔéãÊéÀÔ¢¹ò
 àÀÐµÔáÊ¹é§µòÀ·òèªÑ¹·Ô;äÇé;èì¹Ê¹éò¹Ôé

μÑÇàÅ×Í;¹Öéãªéã¹;ÒÃ;ÓË¹ÇèÒĐãËé;ÒÃ¢ÂÒÂ¢¹Ò
E¹éOμèQ\$ál»¾ÄÒàªN¹ãÊ'ŠàμçAE¹éQ"là©¾OD"Í:ÖèáÊ' \$ÍÂÙè â
'AäAè¢AOA;OAáE' \$¾ÄãÉéàμçA¾×é¹·Oèà'Eì·I»·Né\$EA
«Oè\$IO"ãªéEAOAE¹éO"Í

àÅ×ÍµÑÇàÅ×Í¹Öéà¾×èìàÃÔèÁãªésÒ¹áí»¾ÅÔàªÑ¹¹Öé¹à
´Éì·Í»áí»¾ÅÔàªÑ¹·Öèä´éìÖÉ¹`äÇéÍÖìâ»ÁáìAAÉ¹Öè§
µÑÇÍÂèÒ§àªè¹ªØ³ÊÒÁÒÃ¶ÊÃéÒ§à
´Éì·Í»à¾ÖèAÇÖé¹à¾×èìãªésÒ¹IAèO§í×è¹àªè¹ÊÓËÃÑºàÇÇºàºÃÒà«ÍÃì
ÉOÉANºãªéìèO¹ÍÒàAAì¹ìàE¹×Í´Öìà´Éì·Í»¶Í§ÇO¹ã´ÇÉì·Öèã»ç¹Ö¿IAµì

»éí^{1a}xèíà
Éì·Í»ál»³/₄ÂÔà^aÑ¹·ÕèÊÃéÒ\$Öé¹ÊÓËÃÑ⁰ã^aésÒ¹Íxè¹ã¹μÑÇàÂ×Í¹Õé
¹Í·Ö¹Öé^aØ³ANŞEOAOA¶ã^aé»ØèÁá⁰⁰·AI»·OC¹ã¹Í·OÃàÂ×Íà
Éì·Í»·Õè^aØ³EAéOŞăÇéEOÉAN⁰ál»³/₄ÂÔà^aÑ¹Íxè¹
¿ÔÂ¹Õé·ĐÁÕ¹çµèíàÁ×èÍ^aØ³ă
é·Oà^aÂ×èÍŞÉAOAàÂ×Í¹μÑÇàÂ×Í¹·àÃÔèÁã^aésÒ¹ál»³/₄ÂÔà^aÑ¹¹Õéã¹ÍÕ¹
à·Éì·Í»É¹Oè\$"

Ë¹éÒÎĴμ⌘ÕÂîãªéã¹;ÒÃ»ÃÑºà»ÅÕèÂ¹ "ÎĴμ⌘ÕÂî" à¾¼xèĴ;ÓË¹
 ´μÓáE¹è§E¹éÔμèÔ§áĴ»¾¼ÅÓà⌘ªN¹⁰¹à´ÉĴ·Ĵ»´éÇÅμNÇ⌘Ø³àĴ

jÒÃã^aéᵂÕÂî¼ÊÁ¹Õé·ĐÂéQÂĚ¹éÒµèÒ§.ÕèjÓÃÑ§ã^aé§Ò¹ÍÂÙèã¹ϕ³Đ¹Õé
(.OèjOÃÑ§.Ó§O¹ÍÂÙè) ä»AN§ÍOj·IAO¾E¹Oèšâ´AÍÂÙèã¹µOáE¹èšà
ÕAÇjN¹

ϣŌÂj¹/₄ÊÁ¹Ōé[·]ĐÂéÒÂË¹éÒµèÒ§.ÑésĚÁ'ã¹''íaÊ
'§¹/₄ĀāĀĐál»³/₄ĀŌàϣ^aN¹.Ōèã^aé§O¹IAUèã¹ϣ³Đ¹Ōéă»ÂÑ§ÍŌjË¹éÒ''ÍË¹Ōè§

⌘ÕÂ½¼ÊÁ¹Õé¨ÐÂéÒÂË¹éÒµèÒ\$Í\$áÍ»¾¼ÅÔà⌘ªÑ¹.Ñé\$ËÁ´ä»ÂÑ\$¨íaÊ
´\$¼Å«Oè\$AÔàAOËì¾¼lÂàµlAìlAUè

ËÒ;ø³ÁÕà´Êì·Í»áí»¾ÄÔàªÑ¹.ÕèãªésÒ¹ÍÂÙèËÀÒÂË¹éÒ
ªOÄì¼EÄ¹Oé´Đà»ÄOèÄ¹·Ojà´Êì·J»E¹OèSä»ANŞIOjà´Êì·l»E¹ÖèS
ø³EOAOÄJì·ªOÄì¼EÄ¹Oé«éOìN¹EÄOAªANéSà¾×èIÇ¹Uà
´Êì·l»áí»¾ÄÔàªÑ¹.NéŞEÄ´.OèãªésÒ¹ÍÂÙè

à³/₄ Global Setting »ÃĐıÍ°
éÇÂµNÇàÃ×ıı«QèŞà»ç¹µÑÇÃèÇÁıÍŞâ»ÃájÃÁıÑıÒÃà
Éıııı»áÃĐâ»AájAAıNıÖAáı»³/₄ÃÖà^aN¹.NéŞEÁı

ıÖÃàÅ×ıı¢ÂÔÂ¢¹Ò´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åã¹ "à´Ėıı·Í»·ÑésĖĖÁ´"
ĖĖĖĖĖĖĖĖıÖĖ¢ÂÖĖ¢¹Ö´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åàµ¢ĖĖ¹éÖà´Ėıı·Í»
ĖĖĖĖĖĖĖĖıÖĖ¢ÂÖĖ¢¹Ö´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åà»¢¹ĖĖĖĖĖ¹éÖıı
ıÖÃàÅ×ıı¢ÂÔÂ¢¹Ò´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åã¹ "Ė¹éÖıı·ÖėáĖ´şÍĖĖĖ"
ĖĖĖĖĖĖĖĖıÖĖ¢ÂÖĖ¢¹Ö´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åàµ¢ĖĖ¹éÖııĖĖĖĖĖĖ
ıÖÃàÅ×ıı¢ÂÔÂ¢¹Ò´áı»¾ÅÔàªªÑ¹ãĖėáĖ´š¼Åã¹ "Ė¹éÖıı·ÖėáĖ´şÍĖĖĖ"

jÒÃjÓË¹ãªéØ³ÊÁ°ÑμÔ¹Õé.ÓãËéÁÕàÁ¹ÙÂèÍÂ "NVIDIA Desktop
Manager"
à¾ÔèÀçÖé¹ÁÒã¹àÁ¹ÙÃĐ°°çÍŠË¹éÒμèÒ§ál»¾ÅÔàªÑ¹.ÕèÍÂÙè
éO¹⁰¹.Né§ÊÁ´àÁ¹ÙÂèÍÂ¹ÕéĐªèÇÃËéàçéOãªé¿Ñ§jªÑ¹jOA´N
´jOÃál»¾ÅÔàªÑ¹.Né§ÊÁ´ãé§èOÃáÃĐAC´àAçÇAOè§çOé¹â
´ÄäAè´Oà»ç¹μéÍ§à»O´μ¹â.ÅÅ¾Oà¹ÃçÍ§â»ÁájAA´N´jOAà´Ejì.Ì»
ªØ³ÊÒÁÒÃ¹àçéÒÊÙèàÁ¹ÙÃĐ°°çÍŠË¹éÒμèÒ§ál»¾ÅÔàªÑ¹ã´éâ
´AªAOjçCO·OèãμàμOÃ°OAìÊÃ×jªÃÔj·OèäÌμ¹àÃçjæ
çÍ§ál»¾ÅÔàªÑ¹«Oè§IAÙè´éO¹«éOAEØ´çÍ§ãμàμOÃ°OAì

jÒÃàÅ×ÍjμÑÇàÅ×Íj:¹Õé"ĐªèÇÂãĚéâ»Ãá;ÃÁ"Ñ´jÒÃà´Êjì·Í»»éÍsjÑ¹ÇÔ¹â
Çì»êl»lN»AD´NºĚUŞ"Q;jOÄ¢AOAĚA×l;OÄáA;lìjà»ç¹ĚÍŞ"lAO¾
(ĚA×lAO;jÇèO¹Né¹) â´A;OÄjOĚ¹
μOáĚ¹èŞ»êl»lN»ãĚAĚãĚĚà¢éO;ÑºĚ¹éO"Í

àÅ×ÍµÑÇàÅ×Í;¹Öéà¾×èÍÑ
´E¹éÔµèÖ§»êÍ»ÎÑ»ãÉÍÃUèµÃ§;ÅÒ§Ë¹éÒ´Í·Öè«Ø³àÅ×Í;àÊÁÍ

àÅ×Íj·ÍÀQ¾.Õèø³μέί§;ÒÃãĚĚ¹έΟμεò§»êÍ»ÍÑ»ÍÎÙèμÃ§;Åò§ â
´Ä;OÄ`ì¹Oé·ĐAÖ;çμεlàA×è|▯Ø³.OàøA×è§EAOÄàÅ×Íj»ØèA""N
´ãĚĚ¹έΟμεò§»êÍ»ÍN»»AOj_¢Oé¹μA§;Åò§E¹έO"ÍEAOÄàA¢"

[illegible]

μÑÇàÅ×í_i¹Õé`Đ°Ñ¹.Ö_iË¹éÒµèÒ\$»êÍ»ÍÑ»ϕÍ\$áÍ»³/₄ÅÔà^σ^aÑ¹äÇéã¹Ë¹éÒ`Íà
..OAC_jN^oË¹éÒµèÒ\$áÍ»³/₄ÅÔà^σ^aÑ¹à`ÔÁ·Ôèã^aéÉAéO\$Ë¹éÒµèÒ\$¹Né¹
ËO_jË¹éÒµèÒ\$»êÍ»IN» "³/₄ÅO`" ä»»AQ_j-·OèÍO_jÍáE`\$¹/₄ÅE¹Oè\$
â»AáíAA`N`_iOAã`E_j·I»`ĐàÅ×è¹ä»ÍAUè·Oè`ÍáE
`\$¹/₄ÅϕI\$Ë¹éÒµèÒ\$áÍ»³/₄ÅÔà^σ^aÑ¹¹Né¹

j´»ØeÁ¹Õéà¾×èlàÃÕÂjµèÒÃèÇÁ·Õèà»ç¹
Õ¿lÀµiáÃĐlµµOAìçlšâ»AájAAˆN´jOAàÊjì·Í»
ËÁÒÂàËµØ·
jOAj´»ØeA¹Õé·ĐäÁèÊè§¼ÅµèÍjÒÃ»ÃÑºà»ÃÕèÂ¹áÍ»¾ÅÔàªÑ¹·ÕèµØ³ä
é·OäÇéã¹E¹éO Application Management

j'»ØèÁ "µjÅs" à¾×èÍÂ×¹ÂÑ¹áÅĐ¹Ó;ÒÃà»ÃÕèÂ¹á»Ås.ÕèαØ³ä
é·Oä»ãªé;NºαèO·Ñ'jOÃà'Ejì·l» ÈÃÑS·Oj¹Né¹ãÉé»Ö
É¹éOµèO\$çÍ\$αl¹â·AA¾Oà¹A

j'»ØèÁ "Â;àÂÔ;" à¾×èl»Ô´Ë¹éÒµèÒ§µí¹â·ÃÅ¾Òà¹Å¢Íſâ»Ãá;ÃÁ·Ñ
jÖÀà´Ê;ì·l» â´ÃäAèµéIſ°N¹·Ö;EA×l¹O;ÖAà»ÃÖèA¹á»Ãſä»ãªé
µÓàµ×Í¹: "ĐÁŒ;ÒÃÂ;àÂÔ;j;ÒÃµÑéſµèÒ·ŒèµØ³ă´éà»ÃŒèÂ¹á»ÃſäÇé

j'»ØèÁ"ujÅšã^aé" à³/₄xèíã^aésÒ¹áÅĐ⁰Ñ¹.ÖjjÒÃà»ÅÕèÂ¹á»Åš^aèÒ.Ñé\$ËÁ
'ÉÅÑ\$Öj¹Né¹ãÉéà»Ô'É¹éOμèO\$í¹â.ÅÅ³/₄Oà¹Å¢l\$â»AájAA"N'jOAà
Éjì.í»

⌘Ø³ÊÒÁÒÃŦàÅ×Í;áÍ»¾ÅÔà⌘Ñ¹áººãËÁèä´éâ´Âãªéä´ÍĐÂçÍ;¹Õé
«ÕèŠ´Đ´N´;ÔAâ´Ââ»Aá;AA´N´;ÔAà´Ë;ì·l»

ÃÒÂ;ÒÃ¹Õéà»c¹ÃÒÂ;ÒÃáí»¾ÃÒàªÑ¹.Õè;ÓÃÑsãªésÒ¹ÃÙèã¹à´Ê;ì·í»
ªØ³|Ó·àÃ×|;áí»¾ÃÒàªÑ¹·Ö;ÃÒÂ;ÒÃ¹Õé ÉA×|ÃĐ°Øáí»¾ÃÒàªÑ¹|xè¹
àªè¹ áí»¾ÃÒàªÑ¹.ÕèäAèä´éãªésÒ¹ÃÙèã¹¢³Đ¹Óé â´Ã;ÒÃ;´»ØèA
"à°ÃÖÊì"

j'»ØèÁ¹Õéà^{3/4}xèÍà»Ô'ä'ÍĐÅçí;ä¿Àì«Öèξ⊞Ø³àÅ×Í;áí»^{3/4}ÅÔà^aÑ¹ÇÔ¹â
ÇÊiãÊéâ»Aá;ÅÅ'N'jÔAà'Êj;·l»Ôà¹Ô¹jÔÅ

ı'»ØèÁ¹Õéà¾×èÍÂ×¹ÂÑ¹ă¿Âî»ÃájÃÁ·ÕèσØ³àÅ×ÍjăCé
ăĒéà»ç¹ál»¾ĀŌàσªN¹ăĒĀē·Ōèâ»ĀájĀĀ"N'jŌĀă'Ējì·l»"Đ'Óà¹Ô¹jŌĂ

j'»ØèÁ¹ÕéËÒ;¤Ø³äAèµéÍ§;ÒÃàÅ×Í;áÍ»¾ÅÔà¤ªÑ¹ã¹¢³Ð¹Õé ¨ÐÁÕ;ÒÃ»Ô
ä'ÍÐÁçÍ;áÍ»¾ÅÔà¤ªÑ¹ãÉAè â´AäÁè·Ö;ÔÃà»ÃÖèA¹á»Å§;ÔÃµÑés¤èÔä´
æ

ä´ÍÐÅç¡¹Öéãªéã¹ÒÃ»é¹ª×èlà´Êì·Í·Öèà»Ô´á¹»¾ÅÔàªÑ¹ãËÁè

»éí^{1a}×èlà´Êì·Í»·ÕèÁÕìÒÃà»Ô´áí»^{3/4}ÅÔà^aÑ¹ãËÁèäÇéã¹ä´ÍĐÅçì¹Õé
¹ì·Òì¹Õé ¢Ø³ÃÑŞËÒÀÒÀ¶àÅ×ì^a×èlà
´Êì·Í»·Òì^a×èlàí»^{3/4}ÅÔà^aÑ¹ì×è¹·Õèä´éÃĐ^oØäÇé
µÑÇÍÂèÒŞà^aè¹ ¢Ø³ÍÒ·µéíŞìÒÃãËéà´Êì·Í»ÇÍŞàÇç^oà^oÃÒà«ÍÃìã^aé^a×èíÇèÒ
"àÇç^o" â»Aá;AÁÍÒàAÁìã^aéÇèQ "àAÁì" ¢Ø³EA^oÑµO "Íµ¢ÓÁì"
ÇÍŞã»Aá;AA´N´ìOÀ´Êì·Í»ĐãËé¢Ø³àÅ×ììÒÃ·ÓŞÖ¹ÇÍŞà
´Êì·Í»áí»^{3/4}ÅÔà^aÑ¹µèÖŞæ ä´é´éÇÂµ¹àíŞ

í'»ØèÁ "µ;Å\$" à¾×èíãéá×èíà´Êì·Í»ª×èíãËÁè
ªØ³"ĐăÁèEOÁOÁ¶ì'»ØèÁ¹Oéă'é¹;ÇèOªØ³"Đ»éí¹ª×èíà´Êì·Í»·Õèãªéă´é

ı'»ØèÁ "ÂıàÅÔı" ËÒıϣØ³ăÁèμέί§ıÒÃ»éı¹ᵃ×èıà´Êı·Í»ă¹ϕ³Đ¹Ŏé

⌘ÕÂì¼ÊÁ¹Õé·ĐáÊ
´šà⌘ÍÀìà«ÍÀìÀU»EÕèàËÅÕèÂÁá^{oo}.Ö^oà¾×èÍãËé⌘Ø³;ÓË¹
´μOáE¹èšà⌘ÍÀìà«ÍÀìÍšàAOËìä´é

àÅ×ÍµÑCàÅ×Í¹Œéà¾×èíãĚéĚ¹éÒµèÒ§»ÃÒ¯.ŒèĚ¹éÒ·íã
Ě¹éÒ·íĚ¹Œèšà¾ŒÅĚ¹éÒ·làŒÅÇ¢³Đ.Œè▯³ãªéàÃŒĚìÃÒĵĚ¹éÒµèÒ§

μÑÇàÅ×í;¹Öé`ĐÁÕ¼ÅµèÍİşı»ÃĐ;íºã¹ÂÙÊà«ÍÃíÔ¹àµíÃìà¿«¹ÇÔ¹â
ÇÉİÇİşàşÅ×èİşăşÅà¹µì àªè¹
ÅÑ;E³ĐÇİŞ·OE;íºOAİáÅĐE¹éÒµèÒŞÊÅÑº;ÒÃ·ÓŞÒ¹

àÅ×ÍµÑÇàÅ×Í;¹Öéà¾×èíãªésÒ¹Ë¹éÒµèÒ§ÊÅÑº;ÒÃ·Ó§Ò¹ «Öè§ä
´éANº;OÄ;ÖË¹ ã¹âEA´ TwinView ãÉéãE´§¼Å·Öè;Öè§;ÅO§E¹éO´I
¹;¹Ö;¹Öé ¢Ø³ÂN§EOAOA¶ãªéE¹éOµèO§
´N§;ÀèOÇÉÅÑº;Nºáí»¾ÅOàªN¹·ÖèãªésÒ¹ºà´Ê;ì·Í»µèÒ§æ ä´éÍÖ;´éÇÂ
Ë¹éÒµèÒ§ÊÅÑº;ÒÃ·Ó§Ò¹¹Öé´Ð»ÃÒ;¬ÖÖé¹àÁ×èí;ªÖÂ¼ÊÁ Alt+Tab

iÒÃ·ÓàgÃ×èÍ§ĚÁÒÂàÅ×Íj·ÕèμÑÇàÅ×Íj¹Õé·Đ·ÓăĚéĚ¹éÒμèÒ§ÊÅÑºiÒÃ
·ÖŞÖ¹»ÄÖj⁻⁰¹·İÄÖ¾·Öè∅³iÖĒ¹'ăÇéàĒÄİ

àÅ×Í_j¨ÍÀÒ¾·Õè¤Ø³µéÍ§;ÒÃãĚéáÊ´§Ě¹éÒµèÒ§ÊÅÑº;ÒÃ·Ó§Ò¹ â
´Å¤Ø³EOAOÄ¶àÅ×Í_j¨O_iÍÀÒ¾·Õèãªé§O¹IAUèã¹¢³Đ¹Óéà·èO¹Né¹

àÅ×ÍµÑÇàÅ×Í¹Öéà¾×èãĚé·ÒÊì°ÒÃì·ÓŞÒ¹Ñ°·ÍÀÒ¾··Íà´ÕÂÇ
à¾×èl»éÍŞìÑ¹ăĂèãĚéĂŌìŌĂăéŞŌ¹ŒéŌĂ·ÍĂŌ¾

μÑÇàÅ×í|àËÄèÒ¹Õé¨Đ;ÓË¹ÇÔ_Õ·Õèâ»Ãá;ÃÁ¨Ñ´;ÒÃà´Ê|ì·Í»|ÓË¹
μÓáE¹è\$Ç|\$E¹éOμèO\$»êÍ»ÍÑ»ÃÇÁ¶Ösä´ÍĐÄç|;º|;«ìçé|¤ÇÓÁáÄä
´ÍĐÄç|;ál»¾⁄₄ÄÖà¤ⁿN¹

àÅ×ÍµÑÇàÅ×Í;¹Öèà¾×èíãªésÒ¹µØ³ÊÁºÑµÔ«ÙÁ
«Òès Ð¢ÁÔÁÔ¾¾ã¹⁰AQàÇ³.ÒèÁÔàµÍÀìà«ÍÀìÇÍàÁÔÈíÍÀÙè
ÁÔ¾¾.Òè¢ÁÔÁáÁéÇ Ð»AQ; ¯¢Qé¹⁰¹ÍÔ; ÍÁÔ¾¾E¹Òès«ÒèsäAèÁÕàµÍÃìà«Í
ÀìÇÍàÁÔÈí ;ÔÁàÅ×è¹àµÍÀìà«ÍÀìàÁÔÈíä».Òè ÍÁÔ¾¾ã´
Ð.ÔãÉéÁÔ¾¾.Òè«ÙÁäÇéà»ÁÔèA¹ä»áE´S.ÒèÍÔ; ÍÁÔ¾¾â´ÁÍÑµâ¹ÁÑµÔ
µØ³ÊÁºÑµÔ«ÙÁ Ð.ÓSÒ¹;çµèíàÁ×èÍµØ³ä
´éàª×èÍÁµèÍ ÍÁÔ¾¾ÊÁÔÁ Íä¢éÔ´éÇA;N¹áÁÐµØ³ä´éàÅ×Í;âÊÁ
´ÍÔÃ¢ÁÔÁÔ¾¾ã¹á¹Ç¹¹EAXÍÁ¹ÇµNésäÇéáÁéÇ

àÅ×ÍµÑÇàÅ×Í;¹Öéà¾×èí¢ÂÒÂÀÒ¾â´ÂãªéÊà;Ááºº Filtered
(áºº»ÁÐÁÖ³¤èÖ)

ϣØ³ÊÒÁÒÃŧãªéİµϣÕÂµèİä»¹Õéà¾×èİϣÇºϣØÁϣØ³ÊÁºŊµÔ«ÙÁă´é
ÇÖÖİOE¹İİµϣÕÂİ·ĐªÁéOAİŊº·Öè·Õã¹á·çº "Hot Keys" â ÁªÅÖİ·Öè¿ÔÅ
İ áÅĐİ·ϣOAİ¼EA·ÖèϣØ³µéİİİOA
ËÁÒÂàËµØ: İİµϣÕÂİ·ĐªÁè·ÓξÒ¹àÁ×èİϣØ³à»Ô´Ë¹éÒ "Zoom" ËÃ×Í "Hot
Keys" ϣéOξăÇē·Néξ¹Oéà¾×èİ»éİİİN¹ăAèăËéϣØ³İOE¹
İİµϣÕÂİăËAè·Nº«éİ¹İŊİİµϣÕÂİ·ÖèăéξO¹IAUè

ÎíµϣÕÂì¹Õé¨Ðà»Ô´ËÃ×Í»Ô´;ÒÃ·Ó§Ò¹ϣØ³Ê°ÑµÔ«ÙÁ

ÎíµϣÕÂì¹Õéà¾ÔèÁÃĐ´Ñº;ÒÃ«ÙÁÀÒ¾

Îíµ²ÕÂì¹ÕéÅ´ÃÐ´ÑºìÒÃ«ÙÁÀÒ¾

¾ÒÃÒÁÔàµÍÃ¹Õé·ĐÃĐ°ØÇèÒÁÕ:ÒÃ»ÃÑ°:ÒÃ«ÙÁÀÒ¾¼jÕè²ÃÑésµèÍÇ
Q¹Q·ÒàA×èlăAèAŒ:OÀàA×èl¹àAOËj (»µŒĐAOjOA»ANºjOA«UAAO¾¼ă
´AINµâ¹ANµQ·Øj²ANés·ŒèàA×èl¹àAOËj) â»A
´OăCéÇèŒjOÀă¾¼ŒèA²èOă¹¾¼OAOAOàµÍÃ¹ŒéÍŒ·ÓăĚé»ÃĐÊÔ·ÔÀÒ
¾¼jOĂ·ŒŒO¹ŒISADººĚA×ÍÁl»¾¼ĂŒà²¹¹ĚĚ

ϣèÒã^{13/4}ÒÃÒÁÔàμÍÀì¹Õéà»ç¹μÑÇàÅ¢áÊ´§;ÒÃ´ÕàÅÂîâ
´AAQÊ¹èÇÃà»ç¹AOÅÅQÇO¹O.O
jèl¹.Oè`ĐĖĀN⁰¡OĀ«UAAO^{3/4}´Oj´ĬÀO^{3/4}Ė¹Öèšă»à»ç¹ĬŎj´ĬÀO^{3/4}Ė¹Öèš ;ÒÃ
OàAAĬ¹Oé`Đ^aèÇĀ»éĭ§;N¹ăAèăĖéAO^{3/4}.Oè«UAăCé";ĬĐâ´´"
ă»AO.N¹.QAĐĖÇèOŠ´ĬAQ^{3/4}ă¹;A³O.OèϣØ³àĀ×èl¹àϣĬĬà«ĬĬĬàÁOÈì^{3/4}ĀO
`ă»ăCé⁰¹´ĬAO^{3/4}.ŎéáĖ´SAO^{3/4}«UAĬĬUè
ϣØ³ĬO´μÑé§ϣèO^{3/4}OAOAOàμĬĬĬ¹Oéà»ç¹EÛ¹ĀìĖOjăĀèμéĭ§;ÒÃăĖéÁŎjO
Ā´ŎàĀĬĬ

àÅ×ÍµÑÇàÅ×Í;¹Öéà¾×èíà»ÅÕèÂ¹ÃĐ´Ñº;ÒÃ«ÙÁÀÒ¾·ÖèáÊ´ŚÎÙè â
´Ã´»ØèÅ Ctrl/Alt/Shift ¢éŒäÇé áÅĐàÅ×è¹â´ÃãªéàÅŒÈ

àÅ×ÍÇèÒ“Đã^aéğÕÂ½ÊÁăŦĐËÇèÒ§ Ctrl, Alt áÅĐ Shift
à¾×éİ»ĂŒèÂ¹ĂĐ’N°İŒ«UAă’Ăă^aéàĂŒÈì

Ë¹éÒÎÎµªÕÂîãªéã¹;ÒÃ»ÃÑºà»ÃÕèÂ¹ "ÎÎµªÕÂî" à¾¼×èÍ;ÓË¹
´µÓáE¹è§E¹éÔµèÓ\$ál»¾¼ÃÓàªªN¹º¹à´Éì·Í»´éÇÃµNÇªªØ³àÍ\$
ËÁÒÂàËµØ: ÎÎµªÕÂî"ÐãÁè·Ó\$Ò¹àÁ×èÍªªØ³à»Ô´Ë¹éÒ."Zoom" ËÃ×Í "Hot
Keys"ªéÓ\$ãÇé·Né\$¹Óéà¾¼×èÍ»éÍ\$;N¹ãAèãËéªªØ³;ÓË¹
ÎÎµªÕÂîãÉAè·Nº«éÍ¹;NºÎÎµªÕÂî·Óèãªé\$Ó¹IAUè

μÑÇàÅ×Í;¹Õé`ĐÂ;àÀÔ;ì;ÒÃãªé¤Ø³ÊÁºÑμÔÅ´ÃÍÂËÂÑ;ã¹áí»¾ÅÔà¤ªÑ¹
3D
àÅ×Í;μÑÇàÅ×Í;¹ÕéËÒ;¤Ø³μέÍ§;ÒÃãËéáí»¾ÅÔà¤ªÑ¹ϕÍ§¤Ø³ÁÕ»ÃĐÊÔ·,
OAO¾EUSÊØ

μÑÇàÅ×Í;¹Õé¨ĐãªéªØ³ÊÁºÑμÔĀ´ĀĪÂËÂÑ;ă´éă¹;Ã³Õ·ÕèªØ³ăªéâËÁ´ 2x
â´ÂâËÁ´¹Õé¨ĐãËªéªØ³ÀÒ¾¼¢İŞÀÒ¾¼·ÕèªÑ
à´¹ăĀĐ»ĀĐÊÔ·,ÔĀÔ¾¼;ÔĀ·ÔŞÔ¹¢İŞăĪ»¾¼ĀÔàªªÑ¹ 3D à¾¼ÔèÁÊÛŞ¢Öé¹

μÑÇàÅ×Í¡¹Õé"ĐàÅ×Í¡à·¤¹Ô¤¡ÒÃÅ'ÃÍÂËÂÑ¡·Õè¶Ù¡μéÍ§·ÕèÁÕã¹ÃØè¹
GeForce3 GPU

¤Ø³ÊÁºÑμÔ¡ÒÃÅ'ÃÍÂËÂÑ¡¶Í§ Quincunx "Đ·ÓãËéâËÁ' 4x AA
·Õè·Ó§Ò¹ªéÒ¡ÇèÒáμè"ĐãËé»ÃĐÊÔ·ÔÀÒ¾·Õè'Õ¡ÇèÒâËÁ' 2x AA

μÑÇàÅ×í₁¹Öé¹Đã^aé^aØ³ÊÁ^oÑμÔÅ¹ÃÍÂËÂÑ_íä¹éã¹_íÃ³Õ·Öè^aØ³ã^aéâËÁ¹ 4x
â¹Â¹ĐãËé^aØ³À^o¾₄ÇÍŞÀ^o¾₄ÊÙŞÊØ¹ áμè·ÓãËé»ÃĐÊÔ¹·ÔÀ^o¾₄ÇÍŞ_íÒÃáÊ¹
Ş¹₄ÃÃ¹ÃŞ¹éÇÃà^aè¹_íN¹

μÑÇàÅ×Í;¹Öé¨ĐàÅ×Í;²èÒ;ÒÃÅ´ÃÍÂËÂÑ;·Öè´Õ·ÖèÊØ
ãÊë;Nºáí»¾ÄÖà²ªN¹ 3D «ÖèŞÊ¹NºÊ¹Ø¹;ÖÄ·ÖŞÖ¹;ÖÃÅ´ÃÍÂËÂÑ;

μÑCàÅ×Í;¹ÖéˆĐãËéαØ³àÅ×Í;ãªéâËÁ´;ÒÃÅ
AIAÊÃÑ;¢³ĐÃÑ¹ái»¾/ÄÖàªN¹ 3D

ϕéÍÁÙÀà;ÕèÂÇ;ÑºèÒ AGP »Ñ´´ØºÑ¹ã¹àºÃ×èÍ§¼ÍÁ¾ÔÇàμíÃìϕÍ§ºØ³

μÑÇàÅ×í:¹Õé:ĐãĚé∅³àÅ×í:ãªéĨμÃÒ AGP ä´é
éÇÃμ¹àİŠ:Ö;ADººÄèIÆİSAO¾¼;AO;Ö;EO;∅³äÁèá¹èãÇèÒ∅³ãªéĨμ
ÅÖ AGP ä´äĚéàÇé¹ªèİŠ·OàªA×èİŠÉAOA¹QéäÇé
ĚANS:Ö;¹Né¹ADººĐ;OE¹İNμAO AGP EÜŞEØ´â´ÁÍÑμâ¹ÁÑμÔ

»ÃÑ°á¶àÅ×èÍ¹à¾×èÍàÅ×Í;ãéÍÑµÃÒ AGP
éÇÅµ¹àÍŠ·Ö;ÃĐ°°ÃèÍÃÍŠÃÖ¾;ÃÖ¿Ö;

