

⌘Ø³ãéµÑÇàÅ×Í;¹Õéà¾×èÍ;ÓË¹´ãËé;ÒÃ´ÓÁÍ fog table
·ÖŞÖ¹EA×İäAè·ÖŞÖ¹

Direct3D ĖÁÒÂ¶ÖŞ ;ÒÃĩ´áÊ´Ş¼Å¹ÕéÊÒÁÒÃ¶áÊ´Ş¼Åá°° D3D â´ÂáÊ
´Ş¼Åä´é·NéŞá°° vertex fog ĖA×İ table fog

à;A°ÖŞ»ÄĐàA·äAèĖÖAQ¶¹Ö⌘ÇÖAĖÖAÒÃ¶Ò;İÒÃĩ´áÇÃİ D3D ÁÒãªéª
éàuçA»ÄĐĖÖ·ÖAQ¾áÄĐuélŞãªé table fog à·èÖ¹Né¹
;ÖAäÅ×İ;µÑÇàÅ×Í;¹ÕéªèÇÄãÊéª¹èã´ª´éÇèÒà;A»ÄĐàA·
NŞ;ÄèÖÇ·Đ·ÖŞÖ¹ä´éµÖA»µÖ;Nªâ»Aà«Ėà«İÄ;ÄÖÇÖ;İİŞ NVidia

μÑÇàÅ×Í;¹ÖéªèÇÃãËéꝑØ³ÊÒÁÒÃ¶Â;àÅÔ;ìÒÃãªéꝑØ³ÊÁºÑμÔ DirectX
àÇÍÃìªNè¹ãÊAè æ ã¹ã´ ÀàÇÍÃìä´ é
à;ÁºÒ§»ÃÐàÀ·.Öèà¢ÖÂ¹¢Öé¹à¾¼×èÍãªé;Ñº DirectX àÇÍÃìªNè¹;èÍ¹ æ
lÖªãAè·Ö§Ö¹¶éOꝑØ³μÖ´ μNé§ DirectX àÇÍÃìªNè¹ 6 ÊÅ×Í 7 äÇé
;OÄàÅ×Í;μÑÇàÅ×Í;¹Öéà»¢¹;OÄ;OE¹´ãÊéAÐºº·Ö§Ö¹ã¹âÊA´ DirectX 5
´N§¹Né¹à;AAØè¹à;èO´Ö§ÊOÄOÄ¶·Ó§Ö¹ã´ éÍÃèÖ§¶U;μéÍ§
ãªéμÑÇàÅ×Í;¹ÖéÊÒ;ꝑØ³μéÍ§;ÒÃÃÑ¹à;ÁÃØè¹à;èÒºÒ§ÃØè¹·ÖèäÁè·Ó§Ò
¹ÊÅ×Í·Ö§Ö¹ãAè»ìμÔ

ãĚéîQÃĩ áÇÃì»ÃÑ⁰ðèÒðÇÒÁÄÖ;ϕÍ§ Z-buffer
ãĚéμA§μOÁ·Oèáí»¾¼ÄÖàð^aN¹μéÍ§;OÁ
â´Â»;μÔ ðØ³ðÇÃ;ÓĚ¹´ãĚéμÑÇàÅ×Í;¹Õé·Ó§Ò¹
A;àÇé¹ã¹;Ä³Ö·ÖèμéÍ§;OÁ;OĚ¹´ Z-buffer àÍ§ ÈÒ;äÁè;ÓĚ¹
´ãĚéμNÇàÅ×Í;¹Öé·Ó§O¹ â»Aá;AAáí»¾¼ÄÖàð^aN¹·Oèä^aé Z-buffer
«OèšäAèμA§;Ñ⁰·Oèä´é;OĚ¹´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
ÊOEANºÑ¿à¿ÍÃì;ÒÃáÊ´§ÀÒ¾ 3 ÁÔµÔä¹áì»¾ÁÔà²Ñ¹ 16 °Ôµ
à¾×èìãËéÊÒÁÒÃ¶EAéO§ÀÒ¾ 3D ä´éÁÔ»AÐÊÔ.ÔÁÒ¾EÛ§ÁÔè§¢Öé¹

ıÖÃıÓĚ´ãĚéáÊ´şâÂıé NVidia ã¹ Direct3D

μÑÇàÅ×ıı¹Œé¨ĐáÊ´şâÂıé NVidia

·ÖèÅØÅÀèÖŞçİŞ¨İAO³/₄¢³Đ·ÖèAN¹áı»³/₄ÅÔàσªÑ¹ Direct3D

â»Ãà«Êà«ÍÃjÃÒ¿Ôj NVidia ÊÒÁÒÃŦÊÃéÒŠÁÔ»áÁç»â
ÁINuâ¹ANµOà³⁄₄×èl³⁄₄OèA·Nés»AĐÊO· ÔAÔ³⁄₄ã¹jÔAÊèš¢éÍÁUÀjÒÃÊÃ
éOŠ³⁄₄×é¹¹⁄₄ÔÇ¹⁄₄èO¹⁰NĖáAĐ»AĐÊO· ÔAÔ³⁄₄ã¹jÔA·OŠO¹¢ÍŠál»³⁄₄AÔàª¹N¹
ÍAèÒšäÃjçuÒÁ â»ÃájÃÁáÍ»³⁄₄AÔàª¹N¹⁰Òš»ÃĐàÀ·ÍÒ·ÁŦjÒÃáÊ
š¹⁄₄A·OèaAèŦUjµéÍŠEOjŦOE¹·ãĖéãéªØ³EA⁰NµOAO»áÁç»INuâ¹ÁÑµÔ
jÔAájé»NĖO ãĖéªØ³A·AĐ·N⁰jÔAĖĖéQŠAO»áÁç»Áš·¹jÇèO·ĐáĖ
š¹⁄₄AŦUjµéÍŠjOAA·AĐ·N⁰AO»áÁç»·ĐEOAQÁŦájé»N-
EOjOACOSµOáĖ¹èš³⁄₄×é¹¹⁄₄OÇãĖĖ "ãAèAOÁÍÁµèl"
(áµè·Đ·ÔãĖéªØ³AO³⁄₄¢ÍŠjOAAĖ·š¹⁄₄AA·Áš·éÇAãª¹jÑ¹)

^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}ä^oÅÔà¹ÕÃÃ)ĚÃ×Íá^{oo} 8-tap anisotropic
â´A·Oèá^{oo}ä^oÅQâ¹ÔAAì"ĐãĚé»AĐÊÖ· ÖAO¾·Oè´ÖìÇèÖ ã¹¢³Đ·Oèá^{oo}
anisotropic "ĐEOAOA¶áE´šAO¾ä´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;ÒÃµÑéšµèÒá[∞];ÓĚ¹àís (ĚÃ×Í "tweak") .ŌèµØ³á' é°Ñ¹.Ö;äCé
ãĚéàÃ×Í;µNÇàÃ×Í;Ö;AÒÃ;ÒÃà^{3/4}×èlàAŌÃ;ã^aésÒ¹;ÒÃµÑéšµèÒ.Ōèµéís
;ŌA "Ō;¹Né¹ãĚéµÃŌ;»ØèA "µ;Ãš" ĚÃ×Í "µ;Ãšã^aé"

aèCÂãĖėø³ĖÒÀOÃĴ°Ñ¹.Öj;ÒÃũÑésæèÒ»Ñ̄...ø°Ñ¹á' é (ÃĆÁ·Ñésªø
 ;OÃũÑésæèQã¹ă ĨĐĂċĴj "ċēĴAUAà³⁄₄OēAãũOÃċĴs Direct3D") à»ċ¹
 "AU»ă°°;OÃũÑésæèO.Ōē;ŌĖ¹'ăĴs" àA×ēĴ°N¹.Ōj;OÃũÑésæèOãĀĖC
 ĀĐ°°'Đ¹ŌæèŌ¹Né¹ă»à»ċ¹ĀOĀĵOĀμēĴ.ēOĀĀOĀĵŌĀă ŌĀ.ŌēAŌĴĀUè
 ĖĀÑs"Ōj;ø³ă' é;ÒÃũÑésæèŌ.Ōē Ō.ŌēĖø'ĖÓĖĀÑ°ăĴĀ°° Direct3D
 āĀĖC āĖĖ°N¹.Ōj;OÃũÑésæèŌ¹Né¹ăCéă»ċ¹AU»ă°°.Ōē;ŌĖ¹'ăĴs (custom
 tweak) «ŌēsªēCĀãĖėø³ĖÒÀOÃĴj;ŌĖ¹'æèŌμĴ;Ōj Direct3D ā'ēĴĀēŌSĀĴ
 'ăĀċĈă'ĀăĀēμēĴsμNésæèŌμNĈăĀ×Ĵ;ăμēĀĐĴĀēŌSăĖĀē.ÑésĖĀ'

ÅºìÒÃµÑé§¤èÒÊÕ·Õèä´éàÅ×Í;äÇé¨Ò;ÃÒÂ;ÒÃ

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
μÓáË¹è\$çÍ\$¾×é¹¹¼ÔÇçÍ\$ã·ç;à«À (Í\$¤ì»ÃĐ;ÍºçÍ\$¾×é¹¹¼ÔÇ)
;ÒÃà»ÃÕèÂ¹¤èÒ¹Öé·ĐÁÕ¹¼ÃµèÍ;ÒÃ;ÓË¹ μÓáË¹è\$à·ç;à«À´ÔÁ â
A·Oè¤èO´O;ÍÃµì·ĐÉ;¤ÃéÍ\$;Nº¤Ø³EÀºNµOçÍ\$ Direct3D
«Í;µíàÇÁºO\$»AĐàA·ÍÒ·µéÍ\$;ÒÃ;ÒA;OE¹
μÓáË¹è\$à·ç;à«ÃÇéµèO\$EO;´éÇA·¤Ø³AÒ¾¼ã¹;ÒÃáÊ
´\$¹¼AAO¾¼çÍ\$áÍ»¾¼AÒà¤ªN¹»AĐàA·N\$;ÃèOÇ·Đ´OçOé¹ ÈÒ;ÁÕ;ÒÃ;ÓË¹
´çéÍAUÀà·ç;à«ÃãEÀè·â
´A»ANºá¶¹ºàA×èÍ¹ã»AQÀĐËÇèÒ\$ÁØÁº¹«éÒÃáÃĐ··Ø
EU¹Aì;ÃO\$çÍ\$à·ç;à«A

â»Ãà«Êà«ÍÃìÃÒ¿Ôìã^aé“Ó¹C¹Ë¹èÇÂ_πÇÒÁ“ÓϕÍ\$ÃĐ⁰⁰.ÕèÃĐ⁰ØäÇéϕÍ\$.Õè
àìç^{03/4}×é^{11/4}ÔÇă^é(¹ì“Ôì“ĐμÔ[’]μNé\$E¹èÇÂ_πÇÒÁ“ÓϕÍ\$ìÔÃì[’]áÊ
\$^{1/4}Ãà^{3/4}ÔÀ\$ÍÀèÔ\$à ÔÀÇ)

ËÁÒÂàËμØ: “Ó¹C¹Ë¹èÇÂ_πÇÒÁ“ÓÊÙ\$ÊØ
‘ϕÍ\$ÃĐ⁰⁰.ÕèÊÔÁÔÃ¶¹ÔÃQă^aéÊÀéÔ\$^{3/4}×é^{11/4}ÔÇÊÔÁÔÃ¶^πÓ¹C³ă
‘é“Ôì“Ó¹C¹RAM·ÔèμÔ[’]μNé\$ÍÀUèă¹à^πÃ×èÍ\$^πÍ^{3/4}QCàμÍÀìϕÍ\$^πØ³
ÃÔè\$μÔ[’]μNé\$RAMăÇéÀÔìà·èÔă[’]πèÔ·ÔèÊÔÁÔÃ¶¹ă^aéă
‘éìç“Đà^{3/4}ÔèAAÔìϕÔé¹éÇÀ

ìÒÃμNé\$^πèÒ¹Õéă^aéă[’]éìÑ⁰ìÒÃì[’]áÊ[’]\$^{1/4}Å PCI (ËÃ×ÍìÒÃì[’]áÊ[’]\$^{1/4}Å AGP
·Ôè·Ô\$Ô¹ă¹ăÊÀ[’]PCI)

àÅ×ÍµÑÇàÅ×Í¹Öéà¾×èÍÂ;àÅÔ;ÖÃ«ÔŞâ¸Ãä¹«ìá¹ÇµÑés
·ÓãĚéáĚ´ŞÀÒ¾ă»ÂÑŞĚ¹éÒ´Íă´é·Ñ¹·Œâ
·ĀăAèµèĬŞĀĭăĚéAŒ;ŒA«ŒŞâ¸Ãä¹«ìAŒ¾ă¹ă¹ÇµÑés;ÅÑ°ă»·Œè´ÍÀÒ¾
áAĐªèÇĀăĚéĬµAŒ;ŒAáĚ´Ş¼ĀĚUŞ;ÇèŒĬµAŒ;ŒAAŒà¿ĀªŒİŞ´ÍáĚ
Ş¼Ā áµèĬŒĚŞ¼Ā;AĐ·ªµè¸Œ³AŒ¾ŒİŞAŒ¾ă 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¡_¢Ôé¹µOÀ¢¹º¢ÍSAÔ¾¾ 3D
EOËANºáí»¾ÅÔàªªÑ¹¹ºQ§IAèO§_ªØ³EOAOA¶àÅ×Í¡ä
´éµNé§áµè¡OAAºÃÍÂËÂÑ¡II¡äEéEÁ´ä»´¹¶OSàÅ×Í¡äEéÁÕ´´Ó¹Ç¹ÃÍÂËÂÑ¡ä
´éEUSEØ´

ã^aéµÑÇàÅ×Í¹Öéã¹ìÒÃÅ
´AIAEÄN;ã¹ál»¾ÅÖà^aN¹.ÖèäÁèÊÒÁÒÃ¶ã^aé^aØ³ÉÁ^oÑµÔ¹Öéä´éâ´ÂµÃS
â»Ã´.ÃÒ^oÇèÒ^oÒSál»¾ÅÖà^aN¹«ÖèSäÁèÊÒÁÒÃ¶ã^aéà.µ¹Ôµ¹Öéä
éìÖ´.ÖãÉéäAèÊÖÁÖÁ¶áE´S¼Ää´éìAèÖSàEAOÐEAÉÅ×láÄèìÖ´àÃ¹à
ìAìAO¾ã¹éµÖA»ìµÖ µØ³µÇAã^aéµÑÇàÅ×Í¹ÖéìAèÖSADAN´ADÇNS »Ö
µNCàÅ×Í¹ÖéÊÖìµØ^{33/4}»NEÖã¹ìÖAäE
S¼Ää;AEÄ×láì»¾ÅÖà^aN¹«ÖèSäAèÊÖÁÒÃ¶ã^aéà.µ¹ÔµìÒÃÅ´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·μíºË¹Í§μèÍØ»í;Ã³ìμèÖ§ æ àªè¹·ÍÆμÖè; à;Αά¾· ΕΑ×Íá»é¹¾ÔÁ¾ìã´ é
·Ö¢Öé¹
ãËéÁ´ªèÒ¹ÖéΑ§ËÒ;¾ºÇèÒ;ÒÃμíºË¹Í§μèÍØ»í;Ã³ìμèÒ§ æ
·Öèªª×èíΑμèÍΑÙè;ÑºªªÃ×èí§ªÍΑ¾ÖÇàμÍΑì»ç¹ã»ÍÆèÖ§ΑèÒªéÒÁÒ;ã¹¢
³Ð·ÖèªØ³àÆè¹à;Α

ªèÇÂãËéä´ÃàÇÍÃìÊÒÁÒÃ¶ãªéÊèÇ¹¢ÂÒÂ OpenGL
GL_KTX_buffer_region ä é

ªèÇÂà¾ÔèÁ»ÃÐÊÔ·ÔÀÒ¾¢ÍŒâ»ÃájÃÁ·ÕèªªéÊÃéÒŒâÁà´Å 3D
·ÔèÊ¹NºÊ¹Ø¹;ÔÁ·ÔŒÔ¹ÃèÇÁ;NºÊèÇ¹¢AÔA¹Ôé

aèÇÂãĚĚĚÒÁÒÃ¶ã^aéĚ¹èÇÂ[▯]ÇÒÁ^ˆÓĚÓĚÃ[°]áĚ^ˆ
ˆs^{1/4}Ä^ˆÖĚ¹èÇÂ[▯]ÇÒÁ^ˆÖĚÃĚĚ^ˆé àÁ×èĚĚ¹ãĚĚã^aéSÒ¹ĚèÇ¹ϕÄÒÄ
GL_KTX_buffer_region
ÍÄèÒSãÄĚĚÖĚÄÖ^ˆÓ¹Ç¹Ě¹èÇÂ[▯]ÇÒÁ^ˆÓÃĐ⁰⁰¹éÍÄĚÇèÒ 8 àÄĚĐä[°]μĚ[▯]
▯Ø^{3ˆ}ĐäÄĚĚÖÄÖÄ¶ã^aéĚèÇ¹ϕÄÖÄá^{00ˆ}ÛINÄà^{3/4}Ä¹ (dual planes) ä^ˆé
ĚÒÃμÑĚS[▯]èÒ¹Œé^ˆĐäÄèÄŒ^{1/4}ÄĚÖĚĚÄèä
éã^aéSÒ¹μNÇàÄ×ĚĚ^ˆã^aéSÒ¹ĚèÇ¹ϕÄÖÄ^{3/4}×é¹·ŒèϕÍS[°]ÑĚàĚÍÄĚ^ˆ

jÒÃjÓĚ¹ãĚéãª;ÔÅàµíÃ\ fast linear-mipmap-linear
ĐªèÇÀà¾ŒèA»ĂĐÊŒ.ŒÀŒ¾ŒİŚáİ»¾ŒŒàªN¹
áµèªŒ³ÀŒ¾ŒİŚÀŒ¾ŒİŒ.Ă.ĂŚ
ã¹ĚÀŒ.æj.Ã³Œ.ªŒ³ÀŒ¾ŒİŚÀŒ¾Œ.Đ.Đ
ĂŚăAèAQj¹Nj.ŒŚ¹Œé¹ªŒ³.ŒŚªÇ.ŒĚ¹
ãĚéãªŒŒŒ¹ªŒ³ĚAŒNµŒ¹Œéà¾Œ×élãĚé»ĂĐÊŒ.ŒÀŒ¾Œà¾ŒŒèÁŒŒé¹

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

ãĖĕàĀ×ĭjμÑĈàĀ×ĭj¹Ōĕà³/₄×ĕĭĀĭ;àĀÔĭĭ;ÔĀã^aĕă´ĀàÇĭĀĭĖÔĖĀÑ^o∅
 ∅OĖNĖS³/₄ÔĀĖĖÇĭS«O³/₄ÔĀU

«Ô³/₄ÔĀU^oÔS»ĀĐĀĀ.Ė¹Ñ^oĖ¹∅^{1a}∅´∅ÓĖNĖS 3D «ÔĖSã^aĕă
 ´ĕĭN^oâ»Āà«ĖĀ«ĭĀĭ;ĀO;Ōj Nvĭdĭa
 ÇĭS«Q³āĀĐĀ³/₄ÔĕĀ»ĀĐĖÔ.ÔĀO³/₄ãĖĖĕàĭ;ĀĖĀ×ĭĀ»Āáĭ;ĀĀáĭ»³/₄ĀÔĀ[∅]āÑ¹
 3D μÑĈàĀ×ĭj¹Ōĕ^aĕĈĀãĖĖĕ∅³ĖOĀOĀĭĖNĖSĀĭ;àĀÔĭĭ;ÔĀã^aĕă^o∅´∅OĖNĖS
 3D ³/₄ÔĀĖĖĕĀĖĀĖÔ¹Ōĕă¹ă´ĀàÇĭĀĭ
 «ÔĖSĀO»ĀĐĀĀ^{a1}ĭĀ¹ĭĀĀ»ĀÔĀ^oà.ÔĀ^o»ĀĐĖÔ.ÔĀÔ³/₄ĖĀ×ĭĀã^aĕă¹ĭ;ÔĀáĭ;ĕ»
 NĖÔ

μÑÇàÅ×í|àĖĀèÒ¹ŒéˆĐ;ÓĖ¹ı;ÒĀĀˆĀÍĀĖĀÑ;á⁰⁰àμçÁĖ¹éÒˆÍ
ĖŒĖĀN⁰àμA×èİS.Qèã^aéäˆĀàCİĀİOpenGLı;ŒĀĀ
ˆĀİĖĖĀN;à»ç¹äˆμ¹Œμ.Qèã^aéä¹ı;ŒĀáμèšçı⁰çıİı⁰àıııäĖĖàĀŒĀ⁰à³/₄×èÍĀˆ
"àĖĖ¹çĀŒçĀĐ"«Œèš»ĀŒı;äĖĖàĖç¹ä¹⁰ŒšμĀNéšçŒŒŒı;ŒĀáĖˆš¹/₄Āá⁰⁰
1.5 x 1.5.ĖŒĀŒĀıĀˆĀİĖĖĀN;çıšĀŒ³/₄äˆéÍĀèŒŒŒŒĀĀç³Đ.Œèá⁰⁰2 x
2ˆĐ.ŒäĖĖĖĀŒ³/₄.ŒèäˆéĀŒμŒ³ĀŒ³/₄ĀıˆàĀŒèĀĀ

ãĚéä´ ÃàÇÍÃìàíçj«ì»ÍÃìµÃÙ»á⁰⁰³/₄Ôjà«Å¢Í§ÊàµíÃÔâí ã¹¢³Đ¹Õéâ»ÃájÃÁ
OpenGL ``Đã^aéÊàµíÃÔâíáÅĐ``Đã^aéàÅ¹Êì^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¿ÔÀμÍÃì anisotropic
à¾×èìà¾ÔèÁ¤Ø³ÀÒ¾¢Í§ÀÒ¾ â»Ã
´ÊÑ§à¡μÇèÒ¡ÒÃàÅ×Í¡¤Ø³ÊÁºÑμÔ¹Õé¨Ðà¾ÔèÁ¤Ø³ÀÒ¾¢Í§ÀÒ¾áμè¨Ð·Ó
ãËé»ÃÐÊÔ·ÔÀÒ¾¢Í§¡ÒÃáÊ´§¼ÅÅ´Å§àªè¹¡Ñ¹

àÁ×èí;ÓË¹´ãËéä´ÃàÇÍÃ` OpenGL ´Ñ´ÊÃÃºÑ¿à¿ÍÃ`
´éÒ¹ËÃÑ§áÃÐºÑ¿à¿ÍÃ`íaÊ´§ÀÒ¾ 3 ÁÔµÔäÇé·ÖèÃÐ´ÑºÇÒÁÃÐàÍÕÃ
´¢Í§;ÒÃáÊ´§¼ÃÃÐ´Ñºà´ÕÃÇ;Ñ¹

ÇÔ,Õ;ÒÃ¹Öé´Ðä´é¼ÃÃÔè§¢Öé¹ËÒ;ãªéË¹èÇÃÇÒÁ´Ó;ÒÃáÊ
´§¼Ã¢Í§â»Ãá;ÃÃ«Öè§ÁÕËÃÒÃË¹éÒµèÒ§

ËÒ;¢Ø³äÁèãªé§Ò¹ä´ÃàÇÍÃ` OpenGL ãËé´Ñ
´ÊÃÃºÑ¿à¿ÍÃ`ÊèÇ¹ËÃÑ§áÃÐºÑ¿à¿ÍÃ`íaÊ´§ÀÒ¾ 3 ÁÔµÔäÇé
´éÇÃ;Ñ¹ã¹·Ø;Ë¹éÒµèÒ§·ÖèáÍ»¾ÃÔàªÑ¹¹Ñé¹ÊÃéÒ§¢Öé¹

¢Ø³ÊÁºÑµÔ¹Öé´ÐªèÇÃà¾ÔèÁ»ÃÐÊÔ·ÔÀÒ¾¢Í§â»Ãá;ÃÃ OpenGL
«Öè§ãªéË¹éÒµèÒ§ËÃÒÃË¹éÒµèÒ§¾ÃéÍÁ;Ñ¹

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

µÑÇàÅ×Í;¹Õéãªé;ÓË¹ÇèÒ¾×é¹¼ÔÇ·ÕèÁÕÃĐ'ÑºÊÕ¹Ñé¹ æ
Đ¹ÓAOãªéã¹â»Áá;ÁÁá»¾ÁÔàªN¹ OpenGL ĒÅ×ÍäAè
µÑÇàÅ×Í; **Use desktop color depth** à»ç¹;ÒÃãªéªÇÒÁà¢éÁ¢ÍÊÕà
ÓAÇ;Nºä'É;ì·Í»¢Í§ÇÓ¹ä'ÇÈì
µÑÇàÅ×Í; **Always use 16 bpp** áÅĐ **Always use 32 bpp** à»ç¹;ÒÃ;ÓË¹
ãÊéãªé¾×é¹¼ÔÇ·ÕèÁOªÇÓÁà¢éAEO·Oè;ÓË¹ ä
'ÄäAèªO¹Ö§¶Ö§;ÒÁ;ÓË¹ ºèÒã¹à'É;ì·Í»

μÑÇàÅ×Í;¹ÕéãéÃĐ°ØâĚÁ;òÃ·Ó§Ò¹ buffer flipping
ãĚĚ·Ó§Ò¹áººàμçĀĒ¹éÖ·ÍçÍšál»¾ÅÖàªªN¹ OpenGL
â´ĀªØ³ÊÒÁÒÃ¶àÅ×Í;ãªéÇÔ·Õ¶èÒĀâÍ¹çéÍÁÙĀáººªÇÍª (Block Transfer)
à¾¾·¿·ĀÖ» (Page Flip) ĒĀ×ÍàÅ×Í;ÍÑuâ¹ĀNμÔ (Auto-select) ;çä´é
μÑÇàÅ×Í;àÅ×Í;ÍÑuâ¹ĀNμÔ·Đ·ŌãĒéä´ĀàÇÍĀìàÅ×Í;ãªéÇÔ, Ō·Ōè´Ō·ŌèÊØ
μŌĀªèŌªÍ¹¿Ō;çÍšÍŌĀÍ´áÇĀì

µÑÇàÅ×Í;¹Õéãªé;ÓĚ´;ÒÃ«ÔŞâªÄä¹«ìá¹ÇµÑéŞã¹â»ÃájÃÁ OpenGL

µÑÇàÅ×Í; Always off

“ĐăÄèãªé;ÔÄ«ÔŞâªÄä¹«ìá¹ÇµÑéŞçÍŞál»¾⁄₄ÄÔàªªÑ¹ OpenGL ·ÑéŞĚÁ´

µÑÇàÅ×Í; Off by default “ĐăÄèãªé;ÒÃ«ÔŞâªÄä¹«ìá¹ÇµÑéŞ

¹;ÇèO“ĐÄÖâ»ÄájAAál»¾⁄₄ÄÔàªªÑ¹ă´àÄÖÄ;ãªé

µÑÇàÅ×Í; On by default “Đăªé;ÒÃ«ÔŞâªÄä¹«ìá¹ÇµÑéŞà»ç¹ªèÒ

ÖçÍÄµì´¹;ÇèQ“ĐÄÖâ»ÄájAAál»¾⁄₄ÄÔàªªÑ¹.ÖèäÄèµéÍŞ;ÖÄäªéŞO¹“ÖŞ

“ĐäÄÖ;ãªé;ÔÄ«ÔŞâªÄä¹«ì¹Öé

ãĚé°Ñ¹.Öïj;ÒÃµÑé§¤èÒà»ç¹ "ÃÛ»áº.Õèj;ÓĚ¹´àÍ§"
àA×èÍ°Ñ¹.Öïj;ÒÃµÑé§¤èÒãĀéÇ
AĐºº.Đ¹Ó¤èÒ¹Né¹ă»ă»ç¹ĀOĀj;ÒÃµèÍ.éÒĀĀÒĀj;ÒĀà´ÔÁ.ÕèĀŌÍĀÙè
ĚĀÑ§¨Òj;¤Ø³ă´éj;ÒÃµÑé§¤èÒ.Õè´Õ.ÕèĚØ´ĚÓĚĀÑºáÍ»¾ĀÔà¤Ñ¹
OpenGL.ăĀéÇ
j;ÔĀ°N¹.Öïj;ÒÃµÑé§¤èÒ¹Ñé¹ăCé¨ĐªèÇĀăĚé¤Ø³ĚÒĀÒĀj;µÑé§¤èÒ¤Í¹¿Ôj;
OpenGL.ă´éĪèO§ĀÇ´ăĀçÇj;èÍ¹.Õè¨ĐăĀŌèĀăªéă»Āăj;ĀĀ.ă
´ĀăĀèµèÍ§µÑé§¤èŌµNÇăĀ×Īj;µèO§ æăĚĀè.Øj;¤ĀNé§

¡ÒÃã^aéá¶^oàÀ×èí^{1a}èÇÃãËé¤Ø³»ÃÑ^o¤ÇÒÁÊÇèÒ§ ¤ÇÒÁ¤Á^aÑ´
ÉA×l¤èOá¡AAO¢Í§á^{a1}à¹ÁEO·ÖèàÀ×l¡ã´é
ã^aé¡ÒÃá¡éä¢ÊÖà^{3/4}×èl¡»ÃÑ^o¤ÇÒÁÊÇèÒ§·Öèáμ¡μèÒ§¡Ñ¹ÃÐËÇèÒ§ÃÙ»μ
é¹©^oN^o¡N^oàlOμ¡^{3/4}Øμ·ÖèáÊ´§^{o1}lØ»¡Ã³lãÊ´§^{1/4}Ã
«Öè§ÁO»AÐáA^{a1}àA×èl·O§O¹¡N^oâ»Aá¡AA»AÐÁÇÃ^{1/4}ÃÃÙ»AÒ^{3/4}
à^{3/4}×èlãÊéä´éEO·Öè¶U¡μéls·ÖèÊØ´(à^aè¹ÃÙ»¶èOA) àA×èlãÊ
´§^{1/4}Ã^{o1}¶lA^{3/4}ÖÇàμlAì
¹l¡j´Ò¡¹Öé à¡Á 3D ËÀÒÂà¡Á´ÐÁÕ¡ÒÃáÊ´§^{1/4}Ã·Öè¤èl¹¢éÒ§Á×´
jOAà^{3/4}ÖèA¤èO¤ÇÒÁÊÇèÒ§áÃÐ/EA×l¤èOá¡AAOã^{a1}à¹ÁEO·ÑésËÁ
´Ð^aèÇAãÊéAO^{3/4}ã¹à¡AÊÇèÒ§¢Öé¹ ¤Ø³·Ö§EOÁOÁ¶àÃè¹à¡Áã´é´Ö¢Öé¹

⌘Ø³ÊÒÁÒÃ¶àÅ×í:á^{a1}à¹ÅÊÕä´éâÂã^aéá¶^oàÅ×è¹
·NéŞANŞÊOAOA¶»AN^oá^{a1}à¹ÅÊOáŞÊOàçOÄÇËÃ×ÍÊÕ¹éÓàŞÔ¹ä´éâ
´ÅµAS EAXI»AN^o.NéŞ 3 á^{a1}à¹A^{3/4}AéIA æ ¡N¹¡çä é

Digital Vibrance

·QāEéꞑØ³EOAÖÃ¶C⁰ꞑØÁ;QÃáÂ;ÊÕáÅĐꞑÇÒÁàçéÁçÍÊÕä´éÁÖ;çÖé¹
«Oè§Eè§¹/₄ÃäEéAO³/₄ã¹ál»³/₄AOàꞑ^aN¹.Né§EÁ´AOEÖ·OèꞑA^aN´AOè§çÖé¹

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

j ÒÃàÅ×íjµÑÇàÅ×íj¹Õé¨Ð: ÓãËéÃÐººãªéj ÒÃµÑé§ªèÒ·ÕèªØ³j ÓË¹
äÇé¢³ÐºUµãªA×èÍšâ´ÂÎÑµâ¹ANµÔ

ËÁÒÂàËµØ:

EOjãªA×èÍ§ªÍÁ¾ÔÇàµíÃì¢Í§ªØ³·Ó§Ò¹ÍÂÙèã¹à¹çµàÇÔÃìj j ÒÃáÊ
´§¹⁄₄ÆËÖ¨Ðà»ÂÖèA¹á»Â§ÉÂÑ§¨Öjã´éÂçljl¹à¢éOEUEçO¹ã
´ÇÉíáÆéÇ

ÃÒÂ;ÒÃ;ÒÃµÑé§èÒ·ÕèØ³⁰Ñ¹.Ö;äÇé
ãÉéàÃ×l;µNÇàÃ×l;Ö;ÃÖÃ;ÖÃà³/₄×èlãÃÖÃ;ã^aé§Ò¹;ÒÃµÑé§èÒ·ÕèµéÍ§
iOA

²Ø³ÊÒÁÒÃŦ°Ñ¹.Ô¡¡ÒÃµÑéš²èÒÊÕ»Ñ¹¹¹.Ø°Ñ¹äÇèà»ç¹ÃÛ»á°.Õè¡ÓË¹
 àlsä´é àA×el°Ñ¹.Ô¡¡ÒÃµÑéš²èÒÁÁéÇ
 ÅÐ°°.Ð¹Ò²èÒ¹Ñé¹ä»à»ç¹ÃÒÃ¡ÒÃµè¹.éÒÃÃÒÃ¡ÒÃà´ÔÁ.ÕèÃÃÍÃÛè

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

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

ãªéàÅ×Í;âĒÁ´ä·ÁìÁÔèšŒÍš´ÍÀÒ¾

μÑÇàÅ×Í; Auto-Detect ãĒéÇÔ¹â´ÇÊìÃÑºèÒ·ŒèàĒÁÒĐĒÁ´Òì´ÍáĒ
s¼ÅàÍš «ŒèšμÑÇàÅ×Í;¹Œé·Đãªéã»ç¹èèŒ´Œ¿Íμì â»A
·AOºÇèŒ´IAO¾AØè¹à;èOºŒšAØè¹Œ´ãAèEOAOA¶ãªéèØ³ĒÁºÑμÔ¹Œ
éä´é

μÑÇàÅ×Í; General Timing Formula ĒÃ×Í **GTF**
à»ç¹μÑÇàÅ×Í;·ŒèAN;ãªé;NºŒŒAì´áÇÃìÃØè¹ãĒÁè æ

μÑÇàÅ×Í; Discrete Monitor Timings ĒÃ×Í **DMT**
à»ç¹AŒμAºO¹AØè¹à;èŒ·ŒèANšºšãªéã¹ŒŒAì´áÇÃìºŒš»ÃĐàÀ·
ãĒĒãªéšŒ¹μÑÇàÅ×Í;¹ŒéEO;ŒŒAì´áÇÃìŒÍšºØ³μéÍšãªéãĒÁ´ DMT

à¾ÔèÁäíí¹ NVidia QuickTweak äÇé·Õè·ÒÊìºÒÃìí§ÇÔ¹â´ÇÊì
äíí¹¹Õéãªé;ÓË¹´ÃÙ»áº Direct3D, OpenGL ËÃ×Í;ÒÃµÑé§ªèÒÊÕ
´éÇÂµ¹àì§ "ä´éíÂèOSAC´àAcC" ºÒ;àA¹U»êì»ìÑ»¹ì;Òì¹Öé
àA¹U¹ÖéÃÑ§AQQA;QAEÖEÃÑºãªéªèO´ÖçÌÀµìáÀĐàAOÂ;ãªéä
¹ĐÄçì;ªØ³EAºNµO;OAáE´§¹¼Ä¹

⌘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§" ÊÃ×Í
"μ;Å§ãªé" à¾×èÍÍÑ»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· ÔÀÔ³/₄ÁÔ;ÂÔè\$¢Öé¹ ÍÂèÔ\$à^aè¹
Îµ^µÔÀì;ÒÁ`Ñ´;ÔÂÇÔ¹â´Ç), ;ÒÁ;ÔÊ¹µÔáÉ¹è\$µÂ\$;ÂÔ\$ãÉé;Ñ^oă
ÎĐÂç; áÃĐ;ÔÃ«UÂ âA×èl^µØ³ă^aé;ÔÃ;ÔÊ¹
´gèÔ^µl¹;Ôà;làA^aN¹ăÉé;Ñ^oÊÃÔÃ`lÂÔ³/₄â»Ãá;ÃÁ`Ñ´;ÒÃà
´Êjì·Í»`ĐÊ¹N^oÊ¹Ø¹;ÒÁ·ÔŜÔ¹¢l\$à´Êjì·Í»ÊÃÔÃà´Êjì·Í»
à³/₄×èl^aèÇÃãÉé^µØ³`Ñ´;ÒÁ³/₄×é¹·Ôè·ÔŜÔ¹ă¹â»Ãá;ÃÁă´é´ ŐÂÔè\$¢Öé¹

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»
ÍĀeOšàªè¹ĭNÇàĀ×ĭĭ; ŌĀĭŌĚ¹´µŌáĒ¹èšĒU¹ĀĭĀQš¢Íšä
´ÍĐĀčlĭ; ŌĀàĀ×ĭĭĭµ¤ŌĀĭ áĀĐ¤èŌĭŌĀ¨Ñ´ĭŌĀâ»ÃáĭĀĀ

»Ô´ä´ÍĐĀçĭ;1ŌéáĀĐ°Ñ1.Öĭ;ÒÃà»ĀŌèĀ1á»ĀšăCé
áμè;ŌĀà»ĀŌèĀ1á»Āš·ĐĀŌ^{1/4}ĀĒĀŊš·Ōĭ;ϰŌ³ϰĀŌĭ "μĭĀš" ĒÃ×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;¹Öéãªé;ÓË¹´μÓáË¹è§;ÒÃáÊ´§ÀÒ¾¹´´Íá¹
âA×è;·ÖÖ¹·Öè²ÇÓÁÁĐàÍÖÁ´μèÖ;ÇèÖ²ÇÓÁÁĐàÍÖÂ´ÊÙ§ÊØ
´·ÖèÉÖÁÖÁ¶ãªéã´é

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

ÃŒà«çµðèÒà Êì·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×èÍÃĐ°ØÃÙ»áº;ÒÃáÊ´§¼Å·Ò§â·Ã·ÑÈ¹ì

ÃÒÂ;ÒÃ¹ÕéãéàÅ×Í;ÃÙ»áº;ÒÃáÊ
´§¼Ä·Ôšâ·Ä·ÑÊ¹µÔÃ»ÃĐà·È·Õè∅³ÍÂÙèÍÒÈÑÂ
ĚÁÒÂaĚµ∅: ĚÒ;»ÃĐà·È·Õè∅³ÍÂÙèäÁè»ÃÒ;ĴÂÙèã¹ÃÒÂ;ÒÃ
ãĚéaÅ×Í;»ÃĐà·È·ÕèÍÂÙèã;Áé»ÃĐà·È·Õè∅³ÍÂÙèÃÔ;ÕèĚ∅´

ıÓĚ¹ ăĚéĂÛ»á^{oo}.ŌèàĀ×Íjà»ç¹ĂÛ»á^{oo}.Ōèă^aéàĀ×èÍà»Ô´àĀ×èÍſ
àĀ×èÍà»Ô´àĀ×èÍſıÍĀ³/₄ÔÇàμÍĀì.Ōèà^a×èÍĀμèÍâ.Ă.ŊĚ¹àçéÒıŊ^oıÒĀìııı
μŊÇàĀ×Íı¹Ōé^aèÇĀăĚéĀŊĚ¹ăăéÇèŌçéııÇŌĀ.ŊéſĒĀ´.ŌèáĒ
ſ^{o1}ıĀŌ³/₄ĀĐĚÇèŌſıĀĐ^oç¹ıŌĀ^oŬμĐ»ĀŌı^{o1}ıâ.Ā.ŊĚ¹ıĀèŌſıııμéÍſ

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^oμÓáĚ¹èšà´Ê;ì·Í»^{o1}·Íâ·Ã·ÑÈ¹;
ĚÁÒÂàĚμØ:

ĚÒ;ÀÒ^{3/4}ã¹â·Ã·ÑÈ¹;
ĚéÁĚ×ÍâÁèÁŒÀÒ^{3/4}à¹×èÍš·Ò;ì;ÒÃ»ÃÑ^oμÑés
ãĚéÁĚ»AĐAO³ 10 ÇO¹O·Œ·ÀŒ^{3/4}·Đ;ÁÑ^oAOáĚ
·š^{1/4}·Œ·ŒèμOáĚ¹èš·Œèà»ç¹·Œ·ÍÁμ;â·ÁNμâ¹ÁNμŒ
·Ò;ì¹Ñé¹·Ø³ÁÑšĚOAOÁ·ÍâÁŒèÁ·Œ;ŒA»ÁÑ^oμÑés·èÒãĚÁèÍŒ;·ãÃÑ
ésĚÁÑš·Œ;ì;ŒĚ¹·μOáĚ¹èšçÍšà´Ê;ì·Í»áÁéÇ·Ø³μéÍš·ÁŒ;Œè»ØèA
"μ;Áš"ĚA×Í"μ;Ášã^aé"à^{3/4}×èÍ^oN¹·Œ;èèOAOÁã¹àÇAO 10 ÇO¹O·Œ

ÃŒà«çµà´Êì·Í»ä»ÂÑ§µÓáË¹è§´Œ¿ÍẢµìº¹â·Ã·ÑÈ¹ìâ´Âãªé¤ÇÒÁẢĐàíŒÂ
´»N´´´´Œ¹

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

jÓĚ¹ꞡÇÒÁĀĐàİŒÂ´¢İ§¨ÍáÊ´§¼ĀÁĀĐÃĐ´Ũ°ÊŒă¹;ÒĂáÊ
§¼Ā·Œ§¨Íâ·Ā·NE¹ì

ã^aéµÑÇꣳÇ^oꣳØÁàĚĚèÒ¹Õéã¹ǝŌÃ»ÃÑ^oꣳØ³ÀÒ³/₄ŦİŜĚÑÒ³ÇÔ´ŌâĚĚ×Í
DVD ^{o1}·ÍĀŌ³/₄

ꣳØ³ĚÒÁÒÃǝꣳÇ^oꣳØÁꣳèÒꣳÇÒÁĚÇèÒŧ ꣳÇÒÁꣳÁ^aÑ´
ꣳèÒꣳÇŌĀĬŌèĀµÑÇŦİŜĚŌã³/₄×èĬꣳØ³ĀŌ³/₄ǝŌÁáĚ´ŧ¹/₄Ā·Ōè
´ŌãĀ×èĬĀĚ¹ĀŌ³/₄Ā¹µĀİ DVD ã¹àꣳĀ×èĬŧĀ³/₄ŌÇãµĬĀİ

⌘Ø³ÊÒÁÒÃ¶»ÃÑº⌘ÇÒÁ¶ÕèÊÑÒ³¹ÒìÔ¿ÒËÃÑ¿áÅĐÊÑ-
Ö³¹ÖìÔ¿Ö¿İŞĖ¹èÇÃ¿ÇÔÃÖ¿İŞâ»Ãà«Ėà«ĬÃì¿AO¿Ö¿¿İŞ NVidia ä´é

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

ÃĐ°ØƙÇÒÁàÃçÇÊÑÒ³¹ÒÌÔ¡ÒËÅÑ¡à»ç¹àÁ¡ĐàÎÔÃµ«ì

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

ÃĐ°Ø¤ÇÒÁàÃçÇÊÑ-
Ö³¹ÖİÖıÖ¢İ§İÖ¹āmİÀìàç«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¡OèENO³¹OIO;O´ÐAO¹¼ÀãªesÒ¹ã
ÁINµâ¹ANµO·Ø¡µANés·OèàAOèÁãªesO¹ÇO¹ãÇÈì
ÈÁÒÀãÈµØ: µØ³ÈÒÀÒÃ¡µéÒÀÇÑé¹µí¹¡;OÀµÑésÊÑ-
O³¹OIO;O¡Ñµâ¹ANµO·Oè·OŠO¹Ç³ÐàAOèÁµé¹AÐªªª´éª
ª¡;OÀ¡µOÀì <Ctrl> µéOŠàCéÇ³Ð·OèCÓ¹ãÇÈì;OÁÑSàÀOèÁ·ÓŠÒ¹
ÉO¡àµA×èìSµÁ¾¼QÇàulA¡ªª×èlAµèlAÜèìNª¹cµaCOÀìªãÉé¡µOÀ
ì <Ctrl> µéOŠàÇé·N¹·O ÉANSªO¡ª´éAçl¡l¹ãçéOÈUèÇO¹ãÇÈì

ÃÕà«çμÊÑÒ³¹ÒìÔ;Ò·ÑésĚÁ´ áÅéÇãĚéÃĐ^{oo}μÃÇ·ÊÍ°îÒÃì
´áÇAì;ÃOç;Ô;ìèl¹·Ôè·Đã^aéŠÔ¹μNÇᄡÇ^oᄡØA·Ôè;ÔĚ¹´ăÇéIÔ;ᄡÃÑés
¢Íá¹Đ¹ÓăĚéᄡØ³ÃÕà«çμ·Ø;ᄡÃÑés·ÔèáçÅ^a BIOS ¢Íš;ÔÃì´´Í â
´Aã^aéäçAìlÔAàA·ĚOEAN^olN»à´μ BIOS

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

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

⌘Ø³ÊÒÁÒÃ¶ãªéâĚÁ´¹Ŏéã¹; Å³Ŏ·ŎèÁŎÍØ»Í; Å³Í; ŎÃáĚ´
´§¼Å·Ŏèµèl; Nº; ŎÃÍ¨Í Nvidia à¾ŎÃšÍÁèŎšà´ŎÂÇ

Clone –âĚÁ´¹Ŏé¨Đ·ŎãĚé¨làĚ´ §¼ÅÃÍšáĚ´ §¼ÅµÒÁĚ¹éÒ¨ÍĚÅÑ;

Horizontal Span – âĚÁ´¹Ŏéãªéã¹; ÒÃŦÂÒÂà´Ěì·Í»ŦÍšÇŎ¹â

´ĈĚìä»ANš¨làĚ´ §¼Å 2 Ě¹éŎ¨là¹á¹Ĉ¹Íä´é ã¹âĚÁ´¹Ŏé¨làĚ´
´§¼Å·NéšĚÍš¨Đàª×èlÅµèl; N¹à»ç¹³¼×é¹·Ŏè; ŎÃáĚ´ §¼ÅŦ¹Ŏ´ãĚ-
èà¾¼ŎÃš¨là´ŎÂÇ

Vertical Span – âĚÁ´¹Ŏéãªéã¹; ÒÃŦÂÒÂà´Ěì·Í»ŦÍšÇŎ¹â

´ĈĚìä»ANš¨làĚ´ §¼Å 2 Ě¹éŎ¨là¹á¹ĈµNéšä´é ã¹âĚÁ´¹Ŏé¨làĚ´
´§¼Å·NéšĚÍš¨Đàª×èlÅµèl; N¹à»ç¹³¼×é¹·Ŏè; ŎÃáĚ´ §¼ÅŦ¹Ŏ´ãĚ-
èà¾¼ŎÃš¨là´ŎÂÇ

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

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

TwinView Vertical Span - âĖĀ¹ŎéĎ.ÓăĖĖĖĖÔÁÔĂġláĖ¹ŖĀà
Ėġ.ġ»ċİŞCÔ¹âĊĖİ⁰¹ġáĖ¹ŖĀ 2 Ė¹éOġġuèġN¹ă¹á¹ĊġNéŖă é â¹âĖĀ¹Ŏé
ġáĖ¹ŖĀ.ŖéŖĖİŖĖĐà^a×èġAġuèġN¹ă»ċ¹³ŖĀ⁴×é¹.ŎèġOĂăĖ¹ŖĀ⁴Ċ¹OġăĖ-
èà³ŖĀŖġġăŖĀĊ«ŎèŖĖĐ^aèĊĂăĖĖĖĖUĂŖĀ³ă éġĊéOŖĊŖĖ¹ġĊèOġOĂ
UġOġġăŖĀĊ

ÀÒ¾¼¡ÃÒ¿Ô¡µÒÁ¤èÒ¤Í¹¿Ôà¡làÃªÑ¹¢Í§¡ÒÃáÊ´§¹¼Åª¹âËÁ´ TwinView
¡ÒÃ¤ÅÔ¡ÀÒ¾¼¡ÃÒ¿Ô¡¹¹´´ÍÀÒ¾¼´´Ðà»¿¡ÒÃà×¡ªãËé´´ÍáÊ´§¹¼Å¹Ñé¹à»¿´´ÍáÊ
´§¹¼Å»Ñ´´ØºN¹¢Í§¤Ø³àÁ×è¡¤Ø³¤ÅÔ¡¢ÇO¹ÅO¾¼¡AO¿Ô¡·Òè´´ÍAO¾¼
¤Ø³´ÐàË¹ÅÔÂ¡OÃµèO\$æ
·Òè¤Ø³EÖAOÂ¡¶»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´ÁINµâ¹ANµOàA×èl¢Ø³ãA×èl¹àAOËIä»ÊØ¢Í⁰´I

Â;àÀÔ;ì;ÒÃã^aé^øø³ÊÁ^oÑ_μÔ;ÒÃã^{3/4}â´ÂÍÑ_μâ¹ÁÑ_μÔã¹´ÍáÊ´§^{1/4}ÃÁÍ§ËÒ;ä
´éàÃ×Í;μNCàÃ×Í; "ã^aéà´Ê;ì;Í»àÊÃ×Í¹´AÔ§;N^o´ÍáÊ´§^{1/4}ÃÁÍ§ã´é" àCé
«Òè§´Đ·ÔãÊéà´Ê;ì;Í» "ÊÃØ´;ÒÃ·Ó§O¹" ã¹μÓáÊ¹è§ã´μÓáÊ¹è§Ê¹Òè§
øø³ÊÁ^oÑ_μÔ¹ÒéàÊÃØĐÊOÊÃN^o;ÔÃ¹ÔàÊ¹Í§O¹ã¹ál»^{3/4}ÃOà^øã^aN¹·Òéã^aé^øÇ
ÒÃÃĐàÍÔÃ´ã¹;ÔÃáÊ´§^{1/4}ÃÊU§

jÒÃã^aé§Ò¹¤Ø³ÊÁ^ºÑµÔ¹Õé¨ĐĀćıµÓáĚ¹è§jÒÃá^{¾1}»Ñ¨¨Ø^ºÑ¹¢İ§¨İáÊ
§^{¼1}Ā·ÖèàĀ×İjăCéã¹¢³Đ¹Öé «Öè§Đ·ÖãĒéàĒĒİ·İ» "ĒĀØ'jŌĀ·Ō§Ō¹"
ã¹µŌáĒ¹è§ã'µŌăĒ¹è§Ē¹Öè§
¤Ø³ÊÁ^ºÑµÔ¹ÖèàĒĀŌĐĒŌĒĒŌ^ºjŌĀ¹ŌàĒ¹İ§Ō¹ã¹áı»^{¾1}ĀŌà¤Ñ¹·Öèã^aé¤Ç
ŌĀĀĐàİŌĀ'ã¹jŌĀăĒ'§^{¼1}ĀĒU§

ã^aé§Ò¹∅³ÊÁ⁰ÑμÔϕÍ§à´Êì·Í»àÊÁ×Í¹·ÃÔ§ã¹âËÁ´ìÒÃϕÂÔÂÀÒ³/₄ϕÍ§
TwinView
ìÒÃã^aé§Ò¹∅³ÊÁ⁰ÑμÔ¹Õé¹·Ð·ÓãËé∅³μÑé§∅³èÒà´Êì·Í»ãËéÁÕϕ¹Ò´ãË-
èìÇèÒ´ÍáÉ´§¹/₄·Ôèà^a×èìÁàϕéÓ´éÇÂìÑ¹
ÇÔÇ·Õèà^a×èìÁμèìàϕéÒ´éÇÂìÑ¹·Ð»ÃÒì⁻ãËéàËç¹μÁ¹´³/₄×é¹·Õèà⁻
´Êì·Í»·ÔèãËèçÔé¹ àA×èì∅³/₄·ÔÔÔÔAaA×èì¹àAÔËììì¹·Ôì³/₄×é¹·Ôè·ÕèáÊ⁻
§

ÀÒ¾¼¿ÃÒ¿Ô¿µÒÁ¤èÒ¤Í¹¿Ôà¿làÃªÑ¹¢Í§¿ÒÃáÊ´§¼ÅÃÍ§ã¹âËÁ´ TwinView
¿ÒÃ¤ÅÔ¿·Õè¿ÃÒ¿Ô¿·Ð·ÓãËé¤Ø³ÊÒÁÒÃ¶µÑé§¤èÒÍØ»¿Ã³¿¿ÒÃáÊ
§¼Å«Ôe§µè¿¿Nº¿làÊ´§¼ÅÃÍ§·Ôèãªé¿ÔÀ¿·Í·ÔèáÊ´§¼Åªºº TwinView ä´é
ã¹¢³Ð·Ô§Ô¹IAUèâËÁ´ Clone

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

ã¹âĖÁ¹Ōé ¢Ø³ÊÒÁÒÃ¶àÅ×Ĳ;³/₄×é¹.ŌèĖ¹éÒ¹ĲĖèÇ¹.ŌèµéĲĲ;ÒÃ«ÙÁ
ĖĀNŠ¹Ò;àÅ×Ĳ;àĖèÇ ¢Ø³ÊÒÁÒÃ¶«ÙĀă»·ŌèĖ¹éŌ¹ĲĖèÇ¹¹Né¹ă¹é·N¹.Ō â
ĖĀă×èĲ¹µNÇăĖ×èĲ¹éŌ¹ĖèŌŠ

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\$ÀÒ¾¼ (ç¹Ò´ã¹á¹Ç¹í¹µèíá¹ÇµÑés)
ÊÖÊÃÑºĵOÁáÊ´\$¼ÁáººàµçÆ¹éO´Í

jÒÃã^aéşÒ¹µÑCàÅ×Íj¹Õé·Đ·ÓăĚéă´ÃàĆÍÃìjÒÃáÊ´ş^{1/4}ÂÊÒÁÒÃ¶jÓĚ¹
æèOꞤÇÓÁĀĐăİŌĀ´·ŌèàĒÁŌĐĒA;N⁰jŌAáÊ´ş^{1/4}Āă⁰⁰ăµçĀĒ¹éŌİă´é

iÒÃã^aéSÒ¹μÑÇàÅ×Íj¹Õé¨Đà»ç¹iÒÃà^a×èÍÁâÂŞjÒÃᄁÇ⁰ᄁØÁjÒÃ«ÙÁã¹Ë¹é
ÖjÒÃᄁÇ⁰ᄁØAâlàÇlAìàÅAìjN⁰iÒÃᄁÇ⁰ᄁØAjÒA«UÁã¹jÒAáË
ˆS^{1/4}Áá⁰⁰ãµçAE¹éOˆlăéã¹¢³ĐàˆOÁCjN¹

jÒÃ¸ÅÔi.Õè»ØèÁ¹Õé¨Đ·ÓãĚéãªésÒ¹¸Ø³ÊÁºÑμÔj:ÒÃáÊ´§¼Å¢Ñé¹ÊÙ\$â
ĤÃªéâEA´ TwinView Clone â»A´ÊÑ\$àμÇèOμéł\$ãªésO¹âEA´ Clone
ÍAUè¨Œ\$¨Đà¢éOãªé¸Ø³EAºNμOàEÀèO¹Œéã é

jÒÃã^{aé}šÒ¹µŃÇàĀ×Í;¹Ŏé^{˙˙}Đà»ç¹iÒÃjÓĚ¹
ãĚé«l;µiáÇĀiālàÇĀiàĀĀiàĀŎĀ;ã^{aé°}ŃĚÁŎĚàµíĀiĀŎš
ăĀèá¹Đ¹ŎãĚéçØ³ăĀ×l;µŃÇàĀ×Í;¹Ŏé à^{3/4}ĀŎĐ^{˙˙}Đ·ŎãĚéà;Ô´»Ń-
EQã¹jŎĀãĚ šĀŎ^{3/4°1}j ā^{aé1}āĚ
˙šĀŎ^{3/4}ăĀè¶UjµéłšĚĀ×lăĀèĀŎÀ^{3/4}»ÃŎj^ˉčŎé¹ăĀĀ

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¶OèEU\$¢Oé¹·ĐẢ
ÍÑµAO;OAĒNē¹¢ÍŞAO¾¹E¹éO·Í

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´ÃàÇÍÃ OpenGL ãªéºÑ¿à¿ÍÃ;ÒÃáĚ´SÀÒ¾ 3
ÁÔμÔáº 16 °Ôμâ´ÂäÁèªÓ¹ÕS¶ÖSÃÙ»áººÇÍS¾Ô;à«Å·ÕèáÍ»¾ÅÔàªÑ¹ä
´éàÅ×Í;äÇé

μÑÇàÅ×Í;¹Õé´ÐªèÇÂà¾ÔèÁ»ÃĐĚÔ·,ÔÀÒ¾ÇÍS;ÒÃ·ÓSÒ¹áÅĐ;ÒÃÅºÇéÍ
AUÃã¹ºÑ¿à¿ÍÃ;OÃáĚ´SAO¾ 3
ÁOμO·ÕéAOªÇOA¶U;μéÍSã¹;OÃà;çºÇéÍÁÙÅ¹éÍÂ

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

ⱡØ³ÊÒÁÒÃŒãªéµÑÇàÅ×Ĳ¹Œéã¹;ÒÃàÅ×Ĳ;ÇèÒ·ĐãĚé·ÍáÊ´§¼Åã´áÊ´šà
´ĚĲ·Ĳ»ã¹AØA⁰¹«éOÃĚQèš·ŒèàĚç¹ă´éªN´·ŒèÊØ
´ã¹;ŒAàÅ×Ĳ;µÑÇàÅ×Ĳ¹Œé;çⱡ×Ĳ;ŒAãĚ
´§¼A·Đà»AŒèA¹µŒáE¹èšŒİšAŒ¾ã¹E¹éÒ·Í

ã¹¢³Ð¹Õé ãĚéáĚ´š´íáĚ´š¼Å¢íš TwinView :ÑéšĚÁ´
ĚŌ;ꞡØ³µèlØ»;Ā³iäÇéĀŌ;ÇèŌĚ¹ŌèšĬĀèŌšáĀÐꞡØ³ă´éà»ĀÕèĀ¹ăĚĀ
ĭŌĀăĚ´š¼Āà»ç¹ăĚĀ´ă´;çµŌĀ·ŌèăĀēăªèăĚĀ´ Standard
ꞡØ³µéłšăĀ×ĭ;ÇèŌ´ĐăĚ´š¼Ā·Ōè´lă´
¹ĭ;¨Ō;¹Ōé
ꞡØ³ĀÑšĚŌĀŌĀŋꞡĀŌ;ĭ;ĀŌ;Ōĭ·Ōè»ĀŌ;¹¹ĭĀŌ¾ă¹µÑŌꞡŌꞡØĀ´éŌ¹Ō¹ă
´éă´ĀµĀšă¾×èlăĀ×ĭ;ăĚéáĚ´š¼Āă¹´Ĭ·ŌèăĚ´šĬĀŪèă¹¢³Ð¹Ōé

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

[illegible]

▯ÅÔ;à³/₄×èíμÃÇ¨Êí°¨ÍáÊ´§¹/₄Å·ÑésĚÁ´·ÕèμèÍà^a×èÍÁà¢éÒ;Ñ°;ÒÃì¨Í
ãĚéã^aé▯Ø³ĚA°ÑμO¹QéEO;▯Ø³àEOÂ°»ÅNê;à¢éO;N°¨ÍáĚ
´§¹/₄ÅĚÅN§¨O;·Oèà»Ó´▯¹â·ÅÅ³/₄Oà¹Å¢Oé¹AOáĚéÇ

·ÒàᵐÃ×èĭSĖÁÒÀ·Ōèªèĭs¹Ōé
 ĖO;ᵖØ³àª×èĭÀµèĭĲIAŌ¾¼àċéO;ÑªªèĭSàĖŌÃªªªĲáĖ´S¼¼ÅĲĲ«ŌèSäÁèä
 ĕµACĲEIªIAUēā¹ċ³Đ¹Ōé
 ĲQA·Òàªª¹Ōé«Đà»ċ¹»AĐâĲª¹µèĭĲIAŌ¾¼ÃØè¹àĲèÒ
 ĖÃ×ĲIAŌ¾¼·Ōèªª×èĭÀµèĭÑªªèĭSàĖŌÃªª BNC

⌘ÅÔ;à¾×èlàœéÒ´ÙœéÍÁÙÅ·Õèà;ÕèÂÇœéÍ§;ÑºÍĐá´»àμíÃì;ÒÃì´´ÍœÍ§
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¢éíÁÙÅ¢ÍŠADºº.ÔèàÅ×Í;äÇé«ÖèŠÊè§¼Åµèí»ÃĐÊÔ·,ÔÀÒ¾
¢ÍŠ;ÃÖ¿Ô;â ÅAÇA

μÒÃÒ§¹Õéꞡ×ÍÃÒÂ¿ÒÃä¿Àì
áÄĐꞡéÍÁUÃàÇÍÀìªNè¹.Öèà¿ÖèÂÇꞡéÍ§¿Ñ¹.ÖèÁÕ¿ÒÃãªé¿Ñº¿ÒÃì
“Íã¹ꞡ³Đ¹Öé

Ë¹éÒ; ÒÃµÑéşµèÒ ; ÒÃ“Ñ´; ÒÃáí»¾ÅÔàµªÑ¹ ã^aéã¹; ÒÃ“Ñ
´CÔşµÔáE¹èşçİşE¹éOµèÒşáí»¾ÅÔàµªÑ¹AĐĖÇèÒş´ÍáE´ş¹¾ÅáÅĐà
´Ė; ì·İ»ÉÁÔÂ´İ â´AµÑéşµèO·ÔÁĐáí»¾ÅÔàµªÑ¹

ÃÒÂ;ÒÃ¹Õé×ÍÃÒÂ;ÒÃáí»¾ÅÔàªÑ¹.Õèâ»Ãá;ÃÁ·Ñ´;ÒÃà´Ê;·Í»·Ñ
´;ÔÃÍÀUèã¹¢³Ð¹Õé
àÃ×Í;áí»¾ÅÔàªÑ¹·Ò;ÃÒÂ;ÒÃà¾×èÍµÑé§ªèÒª¹;Ô;Ô;ÒÃ·Ñ
´;ÔÃáí»¾ÅÔàªÑ¹ áíéã¢ÀÒÂ;ÒÃâ´Ããé»ØèA "à¾ÕèA" áÃÐ "ÃºÍ;
·ÕèÍÀUè·Õ§¢ÇÒ

í»ØèÁ¹Õéà¾¼×èíà¾¼ÔèÁâ»ÃájÃÁáí»¾¼ÅÔàª¹Ñ¹áººãËÁè¢Í§ÃÒÂ¡ÒÃáí»¾¼
ÅÔàª¹Ñ¹.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'»ØèÁ¹Õéà¾×èÍÅ°áí»¾ÅÔàªÑ¹.ÑéŞĚÁ'Íj'·ÒjÃÒÂjÒÃ
ªÓàµ×í¹: jÒÃj'»ØèÁàĚÅèÒ¹Õé"Đà»ç¹jÒÃÃÕà«çµjÒÃµÑéŞªèÒ·ÑéŞĚÁ
'·ÕèªØ³ă éjOE¹'ăÇéEOEÑ°áí»¾ÅÔàªÑ¹

jÒÃàÅ×ÍjµÑÇàÅ×Íj¹Öéà»ç¹jÒÃjÓË¹
ãËéË¹éÔµèÖ§Í§áI»¾ÅÖàªªN¹»ÅÖj⁻çÖé¹ã¹´íaÊ´§¼Å·ÖèªØ³ä´éjÓË¹
äÇéàÉAI

¿ÔÅ´ì¹Õé"ĐÃĐ°ØÇèÒ"ĐáÊ´şáí»¾ÅÔàªÑ¹.Õèä
´éàÅ×lᵢäÇéã¹¢³Đ¹Õéã¹"íaE´ş¼Å("IAO¾)´Íă´EOjă
´éàÅ×lᵢµNÇàÅ×lᵢ"àAÕèAà»O´ãªeşO¹ái»¾ÅÔàªÑ¹ă¹Ë¹éÒ"ÍËÁÒÂàÅ¢"
ăÇé

ÈÒ;∅³àÅ×í;µÑÇàÅ×í;¹Õé â»Ãá;ÃÁ"Ñ´;òÃà`Ê;ì·Í»"ÐµÔ´µÒÁÇ¹Ò
 ´áÐµÒáÊ¹éŞç;íŞÊ¹éÒµèÒŞál»¾/₄ÃÒàªªÑ¹¹Òé
 àÅ×è;∅³àÃÒèÀµé¹ãéŞÒ¹ál»¾/₄ÃÒàªªÑ¹ â»Ãá;ÃÁ"Ñ´;òÃà`Ê;ì·Í»"Ð;ÒÊ¹
 ´Ê¹éÒµèÒŞál»¾/₄ÃÒàªªÑ¹ÒéãÊéÀÇ¹Ò
 ´áÐµÒáÊ¹éŞµÒÁ·ÒèºÑ¹·Ò;äÇé;è¹Ê¹éÒ¹Õé

μÑÇàÅ×í;¹Öéãªéã¹;ÒÃ;ÓË¹ÇèÒĐãËé;ÒÃ¢ÂÒÂ¢¹Ò
E¹éOμèQ\$ál»¾ÅÒàªN¹ãÊŠàμçAE¹éQÌà©¾ODÌÖèáÊ´\$ÍÂÙè â
´AäAè¢AOA;OAáE´\$¼AãEéàμçA¾×é¹Öèà´Ejì·l»·Né\$EA
«Öè\$IO´ãªéEAOAE¹éO´l

àÅ×ÍµÑÇàÅ×Í¹Õéà¾×èìàÃÔèÁãªésÒ¹áí»¾ÅÔàªÑ¹¹Õé¹à
´Éì·Í»áí»¾ÅÔàªÑ¹·Õèä´éìÔÉ¹`äÇéÍÔìâ»ÁáìAAÉ¹Ôè§
µÑÇÍÂèÒ§àªè¹ªØ³ÊÒÁÒÃ¶ÊÃéÒ§à
´Éì·Í»à¾ÔèAÇÔé¹à¾×èìãªésÒ¹IAèÒ§í×è¹àªè¹ÊÓËÃÑºàÇÇºàºÃÒà«ÍÃì
ÉÓÉANºãªéìèÒ¹ÍÒàAAì¹ìàE¹×Í´Ôìà´Éì·Í»¶Í§ÇÒ¹ã´ÇÉì·Õèã»ç¹Ô¿IAµì

»éí^{1a}xèíà
Éì·Í»ál»¾ÅÔàªÑ¹·ÕèÊÃéÒ§Öé¹ÊÓËÃÑºãªésÒ¹Íxè¹ã¹μÑÇàÅ×Í¹Öé
¹Í·Ö¹ÖéªØ³ANŞEOAOA¶ãªé»ØèÁáªº·AI»·OC¹jã¹jOÃàÅ×Íjà
Éì·Í»·ÕèªØ³EAéOŞăÇéEOÉANºál»¾ÅÔàªÑ¹Íxè¹
¿ÔÅ`ì¹Öé·ĐÁÕjçµèíàÁ×èìªØ³ă
é·OàªA×èìŞEAOAàÅ×ÍjμÑÇàÅ×Íj "àÃÔèÁãªésÒ¹ál»¾ÅÔàªÑ¹¹Öéã¹ÍÕj
àÉì·Í»E¹Oè§"

Ë¹éÒÎĴμ⌘ÕÂîãªéã¹;ÒÃ»ÃÑºà»ÅÕèÂ¹ "ÎĴμ⌘ÕÂî" à¾¼xèĴ;ÓË¹
´μÓáE¹è§E¹éÔμèÔ§ál»¾¼ÅÓà⌘ªN¹⁰¹à´ÉĴ·Í»´éÇÅμNÇ⌘Ø³àís

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

ϣÕÂ½ÊÁ¹Õé¨ĐÂéÒÂË¹éÒµèÒ§.ÑésĚÁ´ă¹´íaÊ
´§½ĀāĀĐál»¾ĀŌàϣªN¹.ŌèăªésO¹IAUèă¹ϣ³Đ¹Ōéă»ÂÑ§ÍŌıË¹éÒ¨ÍË¹Ōè§

ϣÕÂ`¼ÊÁ¹Õé`ĐÂéÒÂË¹éÒµèÒ\$Í\$áí»¾ÅÔàϣªÑ¹.Ñé\$ĚÁ´ă»ÂÑ\$´íaÊ
´\$¼Ä«Oè\$AOàAOËì¾ÍÃàµlÃìÃUè

ËÒ;ºØ³ÁÕà´Êì·Í»áí»¾¼ÅÔàªªÑ¹.ÕèãªésÒ¹ÍÂÙèËÀÒÂË¹éÒ
ªOÀì¹¼EÀ¹Oé´Đà»ÀOèA¹·Ojà´Êì·J»E¹OèSä»ANŞIOjà´Êì·l»E¹ÖèS
ºØ³EOAOA¶Jì·ªOÀì¹¼EÀ¹Oé«éOìN¹EÀOAªANéSà¾¼×èIÇ¹Uà
´Êì·l»áí»¾¼ÅÔàªªÑ¹.NéŞEA´.OèãªésÒ¹ÍÂÙè

à¾ Global Setting »ÃĐıİ°
éÇÂµNÇàÅ×ıı«QèŞà»ç¹µÑÇÃèÇÁıİşâ»ÃájÃÁÑ´ıÒÃà
Éııı»áÃĐâ»AájAAÑ´ıÖAáı»¾ÃÖàªN¹.NéŞEÁ´

ıÖÃàÅ×ıı¢ÂÔÂ¢¹Ò´áı»¾ÅÔàªªÑ¹ãĖĕáĖ´š¼Åã¹ "à´Ėıı·Í»·ÑésĖĖÁ´"
ĖAOA¶OSıOA¢ÂOA¢¹O´áı»¾ÅÔàªªÑ¹ãĖĕáĖ´š¼Åàµ¢AĖ¹éOà´Ėıı·Í»
AÇA¶OSıA³O·Oèµéıš¢AOAıOAáĖ´š¼Åà»ç¹EĖOAĖ¹éOıı
ıÖÃàÅ×ıı¢ÂÔÂ¢¹Ò´áı»¾ÅÔàªªÑ¹ãĖĕáĖ´š¼Åã¹ "Ė¹éOıı·ŖĕáĖ´şÍĖUè"
ĖAOA¶OSıOA¢ÂOA¢¹O´áı»¾ÅÔàªªÑ¹ãĖĕáĖ´š¼Åàµ¢AĖ¹éOııà©¾ŖĐã¹ııà´ŖA·ŖĕãéıĖUè

jÒÃjÓË¹ãªéØ³ÊÁºÑμÔ¹Õé.ÓãËéÁÕàÁ¹ÙÂèÍÂ "NVIDIA Desktop
Manager"
à¾ÔèÀÇÖé¹ÁÒã¹àÁ¹ÙÃĐººÇÍŠË¹éÒμèÒ§ál»¾ÅÔàªÑ¹.ÕèÍÂÙè
éO¹º¹.Ñé§ÊÁ´àÁ¹ÙÂèÍÂ¹ÕéĐªèÇÃËéàÇéOãªé¿Ñ§jªÑ¹jOA´N
´jOÃál»¾ÅÔàªÑ¹.Ñé§ÊÁ´ãé§èOÃãÃĐAC´àAçÇAOè§ÇÖé¹â
´ÄäAè´Oà»ç¹μéÍ§à»O´μ¹â.ÅÅ¾Oà¹ÃÇÍ§â»ÁájAA´N´jOAà´Ejì.Ì»
ºØ³ÊÒÁÒÃ¹àÇéÒÊÙèàÁ¹ÙÃĐººÇÍŠË¹éÒμèÒ§ál»¾ÅÔàªÑ¹ã´éâ
´AªAOjÇÇO·OèãμàμOÃºOAìÊÃ×jªÃÔj·OèäÌμ¹àÃçjæ
ÇÍ§ál»¾ÅÔàªÑ¹«Oè§IAÙè´éO¹«éOAEØ´ÇÍ§ãμàμOÃºOAì

jÒÃàÅ×ÍjμÑÇàÅ×Íj:¹Öé"ĐªèÇÂãĚéâ»Ãá;ÃÁ"Ñ´jÒÃà´Êjì·Í»»éÍsjÑ¹ÇÔ¹â
Çì»êl»lN»AD´NºĚŮŮ"Qj;OÄ¢AOAĚA×l;OÄáA;ll;à»ç¹ĚÍŮ"lAO¾
(ĚA×lAOj;ÇèO¹Né¹) â´A;OÄjOĚ¹
μOáĚ¹èŮ»êl»lN»ãĚAēãĚéà¢éOjÑºĚ¹éO"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`Đ⁰Ñ¹.Ö_iË¹éÒµèÒ§»êÍ»ÍÑ»ϕÍ§áÍ»³/₄ÅÔà^σ^aÑ¹äÇéã¹Ë¹éÒ`Íà
..OAC_jN⁰Ë¹éÒµèÒ§áÍ»³/₄ÅÔà^σ^aN¹à`ÔÁ·Ôèã^aéÉAéO§Ë¹éÒµèÒ§¹Né¹
ËO_jË¹éÒµèÒ§»êÍ»IN» "³/₄ÅO`" ä»»AQ_j·OèÍO_jÍáE`¹/₄ÅË¹Oè§
â»Aá_iAA`N`_iOAã`Ë_j·I»`ĐàÅ×è¹ä»ÍAUè·Oè`ÍáË
`¹/₄ÅϕI§Ë¹éÒµèÒ§áÍ»³/₄ÅÔà^σ^aN¹¹Né¹

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×¹ÃÑ¹áÅĐ¹Ó;ÒÃà»ÃÕèÂ¹á»Ås.ÕèαØ³ä
é·Oä»ãªé;NºαèO·Ñ'jOÃà'Ejì·l» ÈÃÑs·Oj¹Né¹ãÉé»Ö
É¹éOµèO\$çÍ\$αl¹â·AA¾Oà¹Å

j´»ØèÁ "Â;àÂÔ;" à¾×èl»Ô´Ë¹éÒµèÒ§µí¹â·ÃÅ¾Òà¹Å¢Íſâ»Ãá;ÃÁ·Ñ
jÔÀà´Ê;ì·l» â´ÃäAèµéIſ°N¹·Ö;EA×l¹O;ÔAà»ÃÖèA¹á»Ãſä»ãªé
µÓàµ×Í¹: "ĐÁÕ;ÒÃÂ;àÂÔ;j;ÒÃµÑéſµèÒ·ÕèµØ³ă´éà»ÃÕèÂ¹á»ÃſäÇé

j'»ØèÁ"ujÅšã^aé" à³/₄xèíã^aésÒ¹áÅĐ⁰Ñ¹.ÖjjÒÃà»ÅÕèÂ¹á»Åš^aèÒ.ÑéšËÁ
'ÉÅÑš"Öj¹Né¹ãÉéà»Ô'É¹éOμèOš^aí¹â.ÅÅ³/₄Oà¹Åçlšâ»AájAA"N'jOAà
Éjì.í»

⌘Ø³ÊÒÁÒÃŦàÅ×Í;áÍ»¾ÅÔà⌘Ñ¹áººãËÁèä´éâ´Âãªéä´ÍÐÅçÍ¹Öé
«ÖèŠ´Ð´N´;ÔAâ´Ââ»Aá;AA´N´;ÔAà´Ë;ì·l»

ÃÒÂ;ÒÃ¹Õéà»ç¹ÃÒÂ;ÒÃáí»¾ÃÒàªÑ¹.Õè;ÓÃÑsãªésÒ¹ÃÙèã¹à´Ê;ì·í»
ªØ³|Ó·àÃ×|;áí»¾ÃÒàªÑ¹·Ö;ÃÒÂ;ÒÃ¹Õé ÉA×|ÃĐºØáí»¾ÃÒàªÑ¹|×è¹
àªè¹ áí»¾ÃÒàªÑ¹.ÕèäAèä´éãªésÒ¹ÃÙèã¹¢³Đ¹Óé â´Ã;ÒÃ;´»ØèA
"àºÃÖÈi"

j'»ØèÁ¹Õéà^{3/4}xèÍà»Ô'ä'ÍĐÅçí;ä¿Àì«Öèξ⊞Ø³àÅ×Í;áí»^{3/4}ÅÔà^aÑ¹ÇÔ¹â
ÇÊiãĒéâ»Aá;ĀĀ'N'jŌAà'Êj'·l»Ōà¹Ō¹jŌĀ

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

j'»ØèÁ¹ÕéËÒ;¤Ø³äAèµéÍ§;ÒÃàÅ×Í;ál»¾ÅÔà¤ªÑ¹ã¹¢³Ð¹Õé ¨ÐÁÕ;ÒÃ»Ô
ä'ÍÐÁç;ál»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´ÍÐÅçì¹Õé
¹ì·Òì¹Õé ¢Ø³ÃÑŞËÒÀÒÀ¶àÅ×ì^a×èlà
´Êì·Í»·Òì^a×èlàí»^{3/4}ÅÔà^aÑ¹ì×è¹·Õèä´éÃÐ^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»´ÐãËé¢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" ËÒıϣØ³äÁèμέί§ıÒÃ»éı¹×èıà´Êı·Í»ã¹¢³Đ¹Œé

␣ÖÂì¼ÊÁ¹Öé`ĐáÊ
´šà␣Āìà«ĀìĀU»EÖèàĒĀÖèĀĀá^{oo}.Ö^oà¾×èĺăĒé␣Ø³;ÓĒ¹
´μOáĒ¹èšà␣Āìà«ĀìŒĪšàAOĒìă´é

àÅ×ÍµÑCàÅ×Í¹Œéà¾×èíãĚéĚ¹éÒµèÒ§»ÃÒĭ̄.ŒèĚ¹éÒ̄íã
Ě¹éÒ̄ĬĚ¹Œèšà¾ŒÅŞĚ¹éÒ̄làŒAC¢³Đ.Œè▯³ãªéàÃŒĚìÃŒĭĚ¹éÒµèÒ§

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 ¢Ø³ÂÑ§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§ËÁÒÂàÅ×Íj·ÕèμÑÇàÅ×Íj¹Õé·Đ·ÓãËéË¹éÒμèÒ§ÊÃÑºiÒÃ
·ÖŞÖ¹»ÄÖj⁻⁰¹·IAÖ¾·Öè∅³iÖE¹'ăÇéàÉÁÍ

àÅ×Í_j¨ÍÀÒ¾·Õè¤Ø³µéÍ§;ÒÃãËéáÊ´§Ë¹éÒµèÒ§ÊÅÑº;ÒÃ·Ó§Ò¹ â
´Å¤Ø³EOAOÄ¶àÅ×Í_j¨O_i´ÍÀÒ¾·Õèãªé§O¹ÍAUèã¹¢³Đ¹Óéà·èO¹Né¹

àÅ×ÍµÑÇàÅ×Í¹Öéà¾×èãĚé·ÒÊì°ÒÃì·ÓŞÒ¹Ñ°·ÍÀÒ¾··Íà´ÕÂÇ
à¾×él»élŞìN¹ăĂèãĚéĂŌìŌĂăéŞŌ¹ŒéŌĂ·ÍĂŌ¾

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

àÅ×ÍµÑÇàÅ×Í;¹Öèà¾×èíãªésÒ¹¤Ø³ÊÁºÑµÔ«ÙÁ
«Òès Ð¢ÅÖÅÖ¾ã¹⁰AQàÇ³.ÒèÅÖàªÍÀì«ÍÀìÇÍàÁÖÈíÂÙè
ÅÖ¾.Òè¢ÅÖÅáÁéÇ Ð»AQ; ¯¢Qé¹⁰¹ÍÖ; ÍÅÖ¾E¹Òès«ÒèsäAèÁÕàªÍÃìà«Í
ÀìÇÍàÁÖÈ; òÅàÅ×è¹àªÍÀìà«ÍÀìàÁÖÈìä»·Òè ÍÅÖ¾ã´
Ð·ÖãÉéÅÖ¾.Òè«ÙÁäÇéà»ÁÖèA¹ä»áE´§·ÒèÍÖ; ÍÅÖ¾â´ÂÍÑµâ¹ÁÑµÔ
¤Ø³ÊÁºÑµÔ«ÙÁ Ð·Ó§Ö¹;çµèìàÅ×èÍ¤Ø³ä
´éàª×èÍÀµèÍ ÍÅÖ¾ÊÅÖÅ Íà¢éÖ´éÇAjN¹áÅÐ¤Ø³ä´éàÅ×Í;âËÁ
´ÍÖÃ¢ÅÖÅÖ¾ã¹á¹Ç¹¹EAXÍá¹ÇµNésäÇéáÁéÇ

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

ϣØ³ÊÒÁÒÃŧãªéİµϣÕÂİµèİä»¹Õéà¾×èİϣÇºϣØÁϣØ³ÊÁºŊµÔ«ÙÁă´é
ÇÖÖİOE¹İİµϣÕÂİ·ĐªÁéOAİNº·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«éİ¹İNºİİµϣÕÂİ·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×éläAèAÕ:ÒAàA×él¹àAOÉj (»jµÖ·ĐAOjOA»ANºjOA«UAAO¾¼â
´ÁINµâ¹ANµQ·Øj²ANés·OèàA×él¹àAOÉj) â»A
´··OăCéÇèOjOAă¾¼OèA²èOă¹¾¼QAOAOàµÍÃ¹ÕéÍÒ··ÓăĚé»ÃĐÊÔ·,ÔÀÒ
¾¼jOA·OSO¹çISADººEAXÍÁl»¾¼AOà²ªN¹A´A§

ϣèÒã^{13/4}ÒÃÒÁÔàμÍÀì¹Õéà»ç¹μÑÇàÅ¢áÊ´§;ÒÃ´ÕàÅÂîâ
´AAQÊ¹èÇÃà»ç¹AOÅÅQÇO¹O.O
jèl¹.Oè`ĐĖĀN⁰¡OĀ«UAAO^{3/4}´Oj´ĪÀÒ^{3/4}Ė¹Öèšă»à»ç¹ÍÕ;´ĪÀÒ^{3/4}Ė¹Öèš ;ÒÃ
OàAAì¹Oé`Đ^aèÇĀ»é!§;N¹ăAèăĖéAO^{3/4}.Oè«UAăCé";ĪĐâ´´"
ă»AO.N¹.QAĐĖÇèOŠ´ĪAQ^{3/4}ă¹;A³O.OèϣØ³àĀ×èl¹àϣĪÀà«ĪĪàÁÒĖì^{3/4}ĀÒ
`ă»ăCé⁰¹´ĪAO^{3/4}.OéáĖ´SAO^{3/4}«UAĪAUè
ϣØ³lO´μÑé§ϣèO^{3/4}OAOAOàμĪÀì¹Oéà»ç¹EÙ¹ĀìĖÒ;ăĀèμé!§;ÒÃăĖéÁŌ;Ò
Ā´ŌàĀĀì

àÅ×ÍµÑÇàÅ×Í;¹Öéà¾×èìà»ÅÕèÂ¹ÃĐ´Ñº;ÒÃ«ÙÁÀÒ¾·ÖèáÊ´ŚÎÙè â
´Ā´»ØèÅ Ctrl/Alt/Shift ¢éŒäÇé áĀĐàÅ×è¹â´ĀãªéàĀŒĒ

àÅ×ÍÇèÒ“Đã^aéğÕÂj¼ÊÁã´ÃĐËÇèÒ§ Ctrl, Alt áÅĐ Shift
à¾×éíã»ÄÖèÂ¹ÃĐ´NºjOÄ«UAâ´Ãã^aéàÄÖËì

Ë¹éÒÎÎµªÕÂîãªéã¹;ÒÃ»ÃÑºà»ÃÕèÂ¹ "ÎÎµªÕÂî" à¾¼xèÍ;ÓË¹
´µÓáE¹è§E¹éÔµèÓ\$ál»¾¼ÃÓàªªN¹º¹à´Éì·Í»´éÇÃµNÇªªØ³àÍ\$
ËÁÒÂàËµØ: ÎÎµªÕÂî"ÐãÁè·Ó\$Ò¹àÁxèÍªªØ³à»Ô´Ë¹éÒ."Zoom" ËÃ×Í "Hot
Keys"ªéÓ\$ãÇé·Né\$¹Óéà¾¼xèÍ»éÍ\$;N¹ãAèãËéªªØ³;ÓË¹
ÎÎµªÕÂîãËAè·Nº«éÍ¹;NºÎÎµªÕÂî·Óèãªé\$Ó¹IAUè

μÑÇàÅ×Í¡¹Õé¨ÐäÁèÅ´ÃÍÂËÂÑ¡ã¹áÍ»¾ÅÔàªÑ¹ 3D
àÅ×Í¡μÑÇàÅ×Í¡¹ÕéËÒ¡ªØ³μέί§¡ÒÃãËéáÍ»¾ÅÔàªÑ¹ϕί§ªØ³ÁÕ»ÃÐÊÔ.
ÔÅÔ¾ÉÛËË

μÑÇàÅ×Í;¹Õé¨Đãªé¤Ø³ÊÁºÑμÔÂ´ÃÍÂËÂÑ;ä´éã¹;Ã³Õ·Õè¤Ø³ãªéâËÁ´ 2x
â´ÂâËÁ´¹Õé¨ĐãËé¤Ø³ÀÒ¾¼¢Í§ÀÒ¾¼·ÕèªÑ
´à¹áÃĐ»AĐÊÔ·,ÔAÔ¾¼;ÔA·Ô§Ô¹¢Í§áÍ»¾¼AÔàªÑ¹ 3D à¾¼ÔèÁÊÛ§¢Öé¹

μÑÇàÅ×Í;¹Õé¨ĐàÅ×Í;à·¤¹Ô¤;ÒÃÅ´ÃÍÂĚÂÑ;·Õè¶Ù;μέί§·ÕèÁÕã¹ÃØè¹
GeForce3 GPU

¤Ø³ÊÁºÑμÔ;ÒÃÅ´ÃÍÂĚÂÑ;¶Í§ Quincunx ¨ĐÁÕâĚÁ´ 4x AA
·Õè·Ó§Ò¹ªéÒ;ÇèÒ áμè¨ĐãĚé»ÃĐÊÔ·,ÔÀÒ¾·Õèã;Áéà¤ÕÂ§;ÑªâĚÁ´ 2x
AA ·ÕèàÃçÇ;ÇèÒ

μÑÇàÅ×Í¡¹Õé¨ĐãªéªØ³ÊÁºÑμÔÂ´ÃÍÂËÂÑ¡ă´éă¹¡Ã³Õ·ÕèªØ³ăªéâĚÁ´ 4x
â´Â¨ĐãĚéªØ³ÀÒ¾¼ĆÍŚÀÒ¾¼ÊÙŞÊØ´à·èÒ·Õè¨Đà»ç¹ă»ă´éâ
´Ā·ÓŞO¹ªĀéÔĀ¡Nºál»¾¼ĀŌàªªN¹ 3D

μÑÇàÅ×Í;¹Öé¨ĐàÅ×Í;²èÒ;ÒÃÅ´ÃÍÂËÂÑ;·Öè´Õ·ÖèÊØ
ãÊë;Nºá|»¾ÅÖà²ªÑ¹ 3D «Öè§Ê¹NºÊ¹Ø¹;ÖÅ·Ö§Ö¹;ÖÃÅ´ÃÍÂËÂÑ;

μÑCàÅ×Í;¹Öé;ĐãĚéꝞØ³àÅ×Í;ãªéâĚÁ´;ÒÃÅ
AĬĚĀÑ;ϕ³ĐĀN¹áĬ»¾ĀŌàꝞN¹ 3D

ϕείΆÙÅà;ÕèÂÇ;Ñº¤èÒ AGP »Ñ''''ØºÑ¹ã¹à¤Ã×εί§¤ÍÁ¾ÔÇàμίÃìϕÍ§¤Ø³

μÑÇàÅ×Í₁¹ÖéˆĐăĚé⊞Ø³àÅ×Í₁ă^aéÍÑμÃÒ AGP ä´é
éCĀμ¹àİŠˆˆÖ₁AD⁰⁰ĀèĬŦİSAQ^{3/4}₁AO₁Ö₁EO₁⊞Ø³ăĀèá¹èăˆˆÇèÒ⊞Ø³ă^aéÍÑμÃ
Ò AGP ä´ăĚéàÇé^{1a}èİŠˆˆQà⊞A×èİSEĀQA¹Öéà»ç¹á⁰⁰ăĀèă
´éˆQà⊞A×èİSEĀÖĀăÇé ĒĀNSˆˆÖ₁¹Né¹AD⁰⁰ˆĐ₁ÖĒ¹ÍÑμAO AGP ÊÛŞÊØ´â
´ĀİÑμâ¹ĀÑμÖ

»ÃÑ°á¹°àÀ×è¹¹à³⁄₄×è¹àÀ×Íjã°éÍÑµÃÒ AGP ·Õèã°éâ
 ´AAÐ⁰⁰Aè¹A†¹SAO³⁄₄¹AO¿Oí´éÇÀµ¹à¹S

ãËéø³àÅ×ÍÇÔ ÕÏÒÃ·Õèä´ÃàÇÍÃìÑ´Ë¹èÇÂÇÒÁÓÏÒÃáÊ
ß¼ÅÏË¹èÇÃÇÒAÖÇÍŠAĐºº

ªèÇÂ¤Ø³ÃĐ°Ø´Ó¹Ç¹Ë¹èÇÂ¤ÇÒÁ´Ó¢ÍŠÃĐºº.Õèãªé
µÓÁÇÕ,Õ¡ÒÁ·ÕèªØ³ÃĐ°ØäÇéã¹âÊÁ´à¿ÃÁºN¿à¿ÍÃì»Ñ´´´ØºÑ¹

μÑÇàÅ×Í¡¹Õé¨ĐăĚé¤Ø³ÃĐºØÇÔ_Õ¡ÒÃ¨Ñ
·¡ÒÃĚ¹èÇÂ¤ÇÒÃ¨Òà¿ĀĀºÑ¿ă¿ÍĀì âA×èlăªéâĚÁ´à¿ÃĀºÑ¿à¿ÍĀìáºº "ă
·¹ÒĀÒ¤"

â»ÃÁ;ÃÁ PowerMizer ¢Í\$ Nvidja ``Đ^aèÇÂ¤Ø³¤Ç⁰¤ØÁ;ÒÃã^aé³/₄ÃÑ\$SÒ¹¢Í\$
GPU ¤Ø³EOAOA¶^aèÇÂ¤³/₄ÒèAIOAØ;ÒÃã^aéSÒ¹¢Í\$á⁰µàµIAOèä´éâ
´A;OÃµNé\$¤èOà»ç¹ "»AĐEÂN´ä;EUSEØ'" EA×lã^aé;OAãE
´\$;AO;Ö;IAèQSàµçA»AĐEO· OAØ³/₄¢Í\$ GPU â´AàA×l;·Oè
"»AĐEO·, OAØ³/₄;OA·OSÒ¹EUSEØ'"

ËÒì¤Ø³àÅ×ÍjµÑÇàÅ×Íj¹Õé ``ĐªèÇÃãËé TwinView · ÕèãªésÒ¹â´ÂÍĐá
»àµlÀìÇÌS´lâE´S¹¼Å »ÀOj_ ¢Ôé¹·ÕèAĐºº» ¯OºNµÔjOACÔ¹â
´ÇÈìà»ç¹IØ»jA³j´lâE´S¹¼ÂÈÌSµÑÇáAijN¹ «Õès ``ĐªèÇÃãËé¤Ø³ãªésÒ¹à
´Èjì·l»áººà³¼QèAàµQAã ´ésèOA¢Ôé¹ ´â´ÂãªéIĐá
»àµlÀìjAO¿ Ôjà³¼OASµÑÇà ´OAC AĐºº» ¯OºNµÔjÒÃÇÔ¹â´ÇÈì´Đãªé
TwinView · Õèãªé GPU à»ç¹àEA×Í¹IĐá´»àµlÃÌÈÌSµÑÇ·ÕèáAijN¹

μÑÇàÅ×Í;¹Õé"ĐãĚé¤Ø³ÃĐºØ"Ó¹Ç¹¤ÓŒÍÊÛ§ÊØ´.ÕèÃĐººĚÅÑ;ÊÒÁÒÃ¶"Ñ
´¤ÔÇã¹μÑÇà»éÒĚÁÒÂă´é ĚÒ;¤Ø³μέÍ§;ÒÃăĚéă´ÃàÇÍÃìÊÒÁÒÃ¶;ÓĚ¹
´¤ÇÓÁÅÖ;ŒÍ§¤ÔÇ¤ÓŒÍ ãĚéàÅ×Í; "àÅ×Í;ÍÑμâ¹ÁÑμÔ"

μÑÇàÅ×Í_i¹Öẹ́ĐăĚẹ́ø³ă^aé_iÒÃ·ÓÃÒÂ_iÒÃ_iÒÃà¢ÕÂ¹ÍÂèÒ\$ÃÇ
àAçÇă¹lÖ¹àμíAìà¿« AGP ä́ é EO_i^aø^aÖ»¢l\$ø³Ě¹N^oĚ¹ø¹ø³ĚÁ^oÑμÔ¹Öé

μÑCàÅ×Í¡1Öé¨Ð·ÓãËéãªégØ³ÊÁºÑμÔ¡ÒÃàª×èÍÁμèÍ¡ÒÃà¢ÕÂ¹¢Í§ªØªÔ»
AGP ÉOEÂNºáÍ»¾ÄÖàªªN¹ 3D ä´é

μÑÇàÅ×Í¡¹Öé¨Ð·ÓãĚéãªéáᵍᵃ⁰Ñ¿à¿ÍÃ`ᵍÓÊÑèšă´é
âA×èl·ÔŞÔ¹¡Ñºáí»¾⁄₄ĀŌàᵍªÑ¹·ŌéăĀèĀŌ¡ŌĀàĀèŞᵍÇÒÁàÃçÇ¡ÒÃáÊ
´Ş¹⁄₄Āáᵒᵒ 3D

ãĚéãªéÊàµíÃÔâí·ÕèÊ¹ÑºÊ¹Ø¹ăˆ Â API OpenGL

ãĖé◊ø³àÅ×í;âĖĖ´ĖàµíĀÔâí.Õè`Đãªéăĩ;òĀĀñ¹áí»¾ĀÔàªÑ¹ OpenGL

¡ÃÑ^{01/4}ÃÃÑ^{3/4}¡¢í§àíÒµ^{3/4}ØµÊàµíÃÔâí à^aè¹
¡ÔÃÃí§àÈç¹¢í§µÔάµεÃĐ¢eO§·Oèà»ÃOèÃ¹ä»

