

μÑCàÅxÍ;1Õéã^aéÊÓËÑ^o;ÓË¹´ãËé;ÒÃ´´ÓÁÍ\$ fog table
·O\$O¹EAxÍäAè·O\$O¹

Direct3D ËÁÒÂ¶Ö\$;ÒÃì´áÊ´\$¼Å¹ÕéÊÒÁÒÃ¶áÊ´\$¼Å^{oo} D3D â
´AáE´\$¼Å^a´é·Né\$^{oo} vertex fog EAxÍ table fog
à;A^oO\$»AÐàA·äAèÊÒÁÒA¶ã^aéçCOAÉOAOA¶´O;íÒÃì´áÇÃì D3D ä
éàµçA»AÐEO· OAO^¾áAÐµé\$ã^aé table fog à·éO¹Né¹
;OÄàÅxÍ;μÑCàÅxÍ;1ÕéèèÇAãËéá¹èä´ä´éçèOà;A»AÐàA:
´N\$;AèOç´Ð·O\$O¹á´émOA»;μO;N^oá»Aà«Éà«IAì;AO;O;çÍ\$ NVidia

μÑÇàÅ×í;¹ÕéªèÇÃãËéκØ³ÊÒÁÒÃ¶Î;àÅÔ;ì;ÒÃãªéκØ³ÊÁºÑμÔ
DirectX àÇIAiªNè¹ãEAè æ ã¹ã 'AàÇIAiã 'é
à;ÁºÒ§»ÃÐàÀ·ÕèàçÕÂ¹çÕé¹à¾¼×èìãªé;Ñº DirectX àCÍÃiªNè¹;è¹
æ lÒ ªAè·Q§O¹¶éOκØ³μO' μNé§ DirectX àÇIAiªNè¹ 6 ÊA×I 7 àÇé
;OÀàÅ×í;μÑÇàÅ×í;¹Oéª»ç¹;OÀ;QE¹ 'ãÉéAÐºº·Q§O¹ã¹ãÊA' DirectX
5 'N§¹Né¹à;AAØè¹à;èO' O§ÊOÁOÁ¶·O§O¹ã 'éíÀèO§¶U;μéí§
ãªéμÑÇàÅ×í;¹ÕéËÒ;κØ³μéí§;ÒÃÃÑ¹à;ÁÃØè¹à;èÒ·ÕèàÀè·O§Ò¹ËÃ
×I·O§O¹ãAè»jμO

ÊÑèšăĔéîÔÃì´áÇÃì»ÃÑºæèÒæÇÒÁÅÖ; Z-buffer
ãĔĕµAŞµOA·Oèãl»¾AOàæªN¹µéíŞ;OA
â´Â»µÔ æØ³æÇÃ;ÓĔ¹´ăĔĕµÑÇàÅ×í;¹Ŏé·ÓŞÒ¹
A;àÇé¹ă¹;A³Ŏ·ŎèµéíŞ;OA;ŎĔ¹; Z-buffer àŞ EÒ;ăÁè;ŎĔ¹
´ăĔĕµÑÇàÅ×í;¹Ŏé·ÓŞÒ¹ â»Aá;AAá»¾AOàæªN¹·Oèăªé Z-buffer
ăAèµAŞ;Nº·Oèă´é;ŎĔ¹´æèŎæ¹;Ŏ;ăÇé ĐăAè·ŎŞÒ¹

ÊÒÁÒÃ¶àÅ×í;ã^aéà·π¹Ôπã¹;ÒÃ;ÓË¹´πÇÒÁÃÖ;çÍ§^oÑ;à;íÃìä´é
πØ³ÊÁ^oÑμÔ¹Õé·ÓãËéíÒÃ;´áÇÃìÊÒÁÒÃ¶ã^aé;Ãä;μèÒ§ æ ã¹;ÒÃ;ÓË¹
´πÇÒÁÃÖ;çÍ§^oÑ;à;íÃìÊÒÁÒÃ¶ã^aé;Ãä;μèÒ§ æ ã¹;ÒÃ;ÓË¹
à^{3/4}×éíãËéÊÒÁÒÃ¶ÊÁéÓ§ÁÒ^{3/4} 3D ä´éÁÒ»ΑΔΕÔ·,ÒÁÒ^{3/4}ÊÛ§ÂÔè§
çÔé¹

ıÖÃıÓË¹´ăĚéáĚ´şâÂâıé NVidia ã¹ Direct3D
μÑÇàÅ×ıı¹Öé´ĐáĚ´şâÂâıé NVidia ·ÖèÁØÁĚèÒşçÍş´ÍÀÒ¾
ç³Đ·OèAN¹áı»¾AOàα²N¹ Direct3D

â»Ãà«Èà«ÍÃì»ÃĐÁÇÃ^{1/4}Ã;ÃÒ;Ô; NVidia ÈÒÁÒÃ¶ÊÃéÒŞÁÔ»áÁç»â
ÁINµâ¹ANµQà^{3/4}×èlà^{3/4}OèA·Nés»AĐEO· OAO^{3/4}ã¹;OAEèŞ
çéIAUA;OAEAEÓŞ^{3/4}×é^{11/4}OÇ^{1/4}eO¹⁰NEáÃĐ»AĐEO·, OAO^{3/4}ã¹;ÒÃ·ÓŞ
O¹çIŞal»^{3/4}ÃOàα²N¹

ÍÃèÒŞãÃ;µÒÁ â»Ãá;ÃÁáí»^{3/4}ÃÔàα²N¹⁰ÒŞ»ÃĐàÀ·ÍÒ··ÁÕ;ÒÃáÊ
Ş^{1/4}Ã·OèãAè¶U;µéIŞEO;OÉ¹
ãEèã²éα³EA⁰NµOAO»áAç»ÍÑµâ¹ÃÑµÔ ;ÒÃá;é»ÑÈÒ·ãĚéα³Ã
AĐ·N⁰;OAEAEÓŞAO»áAç»ÁŞ¹;CèO·ĐáÊ·Ş^{1/4}Ã¶U;µéIŞ;OAA·AĐ
N⁰·AÔ»áAç»·ĐEOAOA¶á;é»ÑÈÒ;OACÓŞµOáÉ¹èŞ^{3/4}×é^{11/4}OÇãĚé
"ãAèAOAIAµèI" (áµè·Đ·OãĚéα³AO^{3/4}çIŞ;OAAÉ·Ş^{1/4}AA·ÁŞ
éÇAà²e¹;N¹)

æ̀çĀãĒéꝛø³ĒÒÁÒÃ¶àÅ×í;çÔ, ÕÁÔ»áÁç»ÍÑμâ¹ÁÑμÔ·Õèâ»Ãà«Ēà«Í
Āi;ĀO;Ōi Đãæé
ꝛø³ÍÒ àÅ×í;çÔ, Õi;ÒÃÁÔ»áÁç»á^{oo}ã^oĀÔà¹ÕĀĀiĒĒ×í 8-tap
anisotropic à A·Ōèá^{oo}ã^oĀÔà¹ŌĀĀi ĐãĒé»AĐĒO· ŌAO^{3/4}·Ōè
,ŌiçèO ã¹ç³Đ·Ōèá^{oo} anisotropic ĐĒOĀOĀ¶áĒ'šĀO^{3/4}ã' éꝛA^ãÑ
içèO

æø³ÉÒÁÔÃ¶»ÃÑºæèÒäºáíÊ LOD (Level of Detail) ã¹;ÒÃÁÔ»áÁç»ä
e

æèÒäºáíÊ·ÕèµèÓ·Ð·ÓãÉéæø³ÀÒ³⁄₄ç|ŞÀÒ³⁄₄,´ÕçÖé¹ã¹
ç³Ð·Oè;OÃà³⁄₄OèAæèÒäºáíÊ·ÐæèÇAà³⁄₄OèA»AÐÉÔ·ÔÀÒ³⁄₄;ÒÃ·ÓŞÒ
¹ç|Şâ»Aá;AAá|»³⁄₄ÁÔàæªN¹æø³ÉÒÁÔA¶àA·x|;O;æèÒäºáíÊ O;IAµi
5 æèQ àAOèA O; "æø³ÀÒ³⁄₄ç|ŞÀÒ³⁄₄' O·OèÉØ " ä»¹¶IOŞ
"»AÐÉÔ·,OAO³⁄₄;ÔAAN¹' O·OèÉØ "

ÃÒÂ;ÒÃ;ÒÃµÑέξæèÒάºº;ÓË¹´àίξ (ËÃ×Í "tweak") ·ÕèæØ³ä
´éºN¹.Ö;äCé
ãËéàÃ×Í;µÑCàÃ×Í;Ö;ÃQÂ;ÒÃà¾¼×èàÃÕÂ;ãéξÒ¹;ÒÃµÑέξæèÒ·Õ
èµέίξ;OÄ Ö¹Né¹ ãËéæÃÖ;»ØèA "OK" ΕΑ×Í "Apply"

æèÇÃãĒéæø³ĒÓÁÒÃŋ°Ñ¹·Öj;ÒÃµÑésæèÒ»Ñ""ø°Ñ¹ä´é (ÃÇÁ·Ñésæø
´j;ÒÃµÑésæèÒã¹ä´ÍÐÃçj; "çéIAUAà¾¼OèAàµÔÃçIş Direct3D") à»ç¹
"AU»á°°j;ÒÃµÑésæèO·Oèj;OE¹´àIş" àAxéI°N¹·Oj;ÒÃµÑésæèOáAéÇ
AÐ°°"Ð¹OæèO¹Né¹ä»à»ç¹AOÃj;OÃµèI·éOAAOAj;OAà´OA·OèAOIAUè
ĒÃÑş"Òj;æø³ä´é;ÒÃµÑésæèO·Õè´Õ·ÕèÊø´ÉÓĒÑ°à;Áá°° Direct3D
áAéC äĒé°N¹·Oj;ÒÃµÑésæèO¹Né¹äCéà»ç¹AU»á°°·Oèj;OE¹´àIş
(custom tweak) «OèşæèÇÃãĒéæø³ĒÓÁÒÃŋj;OE¹
æèOæI¹j;Oj; Direct3D ä´éIAèOŞAC´àAcÇâ
´ÃàAèµéIşµNésæèOµNÇàÃxIj;áµèÃÐÍÃèOŞãĒÀè·ÑésĒÁ´

Åº;ÒÃµÑέξκèÒÊÕ·Õèä´éàÅ×Í;äÇé¨Ò;ÃÒÂ;ÒÃ

ἄνευ ὧν ἰσχύει ἅπαντες ὁ ἔσθλα

áÊ´šä´ÍĐĀćí;«Öèšă^âéÊÓËĂÑ^º»ĂÑ^ºà»ĂŌèĀ¹;ÒĂμÑέξæèΌί×è¹ æ
ϕI§ Direct3D

μÑCàÅxí;¹Öéã²éà»ÅÕèÂ¹ÇÔ Õ;ÒÃ;ÓË¹´μÓáË¹è§¾×é¹¼ÔÇ
çÍšà·ç;à«Å (Íšμì»ΑÐ;íºçÍš¾×é¹¼ÔÇ)
;ÒÃà»ÅÕèÂ¹æè¹Öé·ΔΑÕ¼Åμè;ÒÃ;ÓË¹´μÓáË¹èšà·ç;à«Åà´ÔÁ â
A·OèæèO´O;ÍÅμì ΔΕΙ´æΑεί§;NºæQ³EAºNμOçÍš Direct3D
«Í;μíáÇΑíºO§»ΑÐàA·IO´μεί§;ÒΑ;ÒΑ;ÓË¹
μÓáË¹èšà·ç;à«ÅàÇέμèO§ËO;´éÇΑ´æQ³ΑO¾ã¹;ÒÃάÊ´§¼ÅÀO¾çÍš
á»¾ÅQàæ²N¹»ΑÐàA·N§;ΑεOÇ Δ´OçOé¹EO;ΑO;ÒΑ;ÓË¹
´çéÍΑUÀà·ç;à«ÅãEÀè â
´A»ANºáíºàÅ×é¹ã»ΑOÃÐËÇèO§ÁOÁº¹«éÒÃάÅÐ´Ø´ÈU¹Â;ÀO§
çÍšà·ç;à«Å

;ÒÃ:Óà^aè¹¹Õé"Đ^aèÇÃĒéâ»Ãà«Ēà«ÍÃi»ÃĐÁÇĀ^{1/4}Ā;ÃÒ;Ô;ĒÒÁÒÃŋã
^aé»ADĀ^{a1}i;O;E¹èÇÃÇÒÁ"ŌçIŞAD⁰⁰.Ōè;ŌE¹'ãÇé
à^{3/4}xèl⁰N¹:Ō;çéIÁUĀ;ŌAEĀéŌŞ^{3/4}xé^{11/4}ŌÇă'é
(¹I;Ō;ã^aéE¹èÇÃÇÒÁ"ŌçIŞ;ŌĀi'áĒ'Ş^{1/4}Āã^{3/4}ŌĀŞÍĀèÒşà'ŌĀÇ)

ĒÁŌĀĒĒµØ: "Ō¹C¹Ē¹èÇÃÇÒÁ"ŌĒÛŞĒØ
çIŞAD⁰⁰.ŌèĒŌÁŌĀŋ¹ŌĀŌã^aéĒĀéŌŞ^{3/4}xé^{11/4}ŌÇĒŌÁŌĀŋ¹ŋŌ¹C
³ă'é"Ō;Ō¹C¹RAM.ŌèµŌ'µNéŞIAUèã¹àŋĀxèIŞŋIA^{3/4}ŌÇàµIĀi
çIŞŋŌ³ĀŌèşµŌ'µNéŞRAM'ãÇéĀŌ;à'èŌã.
ŋèŌ.ŌèĒŌÁŌĀŋã^aéã'é;ç"Đà^{3/4}ŌèĀĀŌ;çŌé¹'éÇĀ

;ŌÃµNéŞŋèŌ¹Ōéã^aéã'é;N⁰;ŌĀi'áĒ'Ş^{1/4}Ā PCI (ĒÃÍ;ŌĀi'áĒ'Ş^{1/4}Ā
AGP.Ōè.ŌŞŌ¹ã¹ĀĒĀ PCI)

àÅxí;µÑçàÅxí;¹Õéà¾xèíÂ;àÅÔ;:ÒÃ«ÔşâxÃä¹«íá¹çµÑés
àÃÕÂ;íÕ;ĴÀèÒşCèÒ";ÒÃÂ;àÅÔ; VSYNC"
«Òèş²èÇÃäĒéĒÒÁÒÁĴàA¹à'ĴĴĴO¾⁴⁰¹"ĴáĒ'ş¹⁴Ĵâ
'ĴâĴèµĒĴĴĴĴ«ÔşâxÃä¹«íá¹á¹çµÑésâĒĴè'áĴĴ²èÇÃäĒéĒÒÁÒÁĴáĒ
'ş¹⁴Ĵâ"éàAcC;CèOíNµAO;OĴAOà;A²çĴş"ĴáĒ'ş¹⁴Ĵ
áµĒĴO"Ēéş¹⁴Ĵ;ĴĴ·²µĒĴxØ³AO¾⁴çĴşAO¾⁴â'e

μÑÇàÅ×í;¹Õëãªé;ÓË¹´´´Ó¹Ç¹;ÒÃÅ´ÃÍÄËÑ;·Õèãªéã¹áí»¾ÅÔàκªÑ¹
D3D

íÒÃÅ´ÃÍÄËÑ;à»ç¹à·κ¹Ôκ·Õèãªéã¹;ÒÃÅ´ "àÊé¹çÃØçÃÐ"
«OèšºQšκANés·Ð»AQ; çOé¹μOAç¹çIšAO¾¾ 3D EOÉANº
áí»¾¾ÅÔàκªÑ¹ºOšIAèOš κØ³EQAOA¶àÅ×í;ä
'éμNéšáμè;OÃÅºAÍÄËÑ;äÊéÉÄ
'ä»¹¶OšàÅ×í;äÊéAO´O¹Ç¹AÍÄËÑ;ä´éÊÛšÊØ´

ã^aéµÑCàÅ×Í:1Õéã¹í:ÒÃÅ
'ΑΙΑΕΑΝ;ã¹άλ»^{3/4}ÅÔàκ^aN¹.ÕèäAèÊÒÁÒÃ¶ã^aéκ³ÊÁ^oÑµÔ¹Õéä'éâ
'ΑµΑξ

â»Ã'.ÃÒ^oCèÒ^oÒςάλ»^{3/4}ÅÔàκ^aN¹«ÕèςäAèÊÒÁÒÃ¶ã^aéà·κ¹Ôκ¹Õéä
'éíO...OãÉéäAèÊÒÁÒÃ¶áÉ'ς^{1/4}Ãä
'éíAèOςàEAOÐÉAÉA×láAèÊÒÁÒÃ¶àÃ¹à'íÃ\ÀÒ^{3/4}ä'émÒÁ»;µÔ
κ³κ³CAã^aéµÑCàÅ×Í:1OéíAèOςADAN'ΑÐÇΝς»O
µÑCàÅ×Í:1OéEO;κ³κ^{3/4}»NEOã¹í:OÁáÉ
'ς^{1/4}Ãä;AÉA×láλ»^{3/4}ÅÔàκ^aN¹«OèςäAèÊÒÁÒÃ¶ã^aéà·κ¹Ôκ¹ÒÃÅ
'ΑΙΑΕΑΝ;ã¹é

μÑÇàÅ×j;1Öéã^aé;ÓË¹´;ÒÃàμÃÖÄÁ´´Ó¹Ç¹à;ÃÁ
çI§«O^{3/4}ÖAU;èl¹.Oè`Ð»ΑΒΑÇΑ^{1/4}ÀÀ×èì³àÅÔ;ã^aé;ÒÃ«Ôșâ³Ãä¹
«iã¹á¹ÇμNés
ã¹⁰Òș;Ã³Ö`ÂÔèșÃÖ´´Ó¹Ç¹à;ÃÁÁÒ;çÖé¹à·èÒã´ "input lag"
lÖ´μl⁰E¹I§μèlIØ»j;A³iμèÒșæ à^aè¹ lÁËμOè; à;Áá^{3/4}
EAXlá»é^{13/4}OA^{3/4}lã´é´OçOé¹
ãËéÁ´³èÒ¹ÖéÅșËÒ;^{3/4}ÇèÒ;ÒÃμl⁰E¹I§μèlIØ»j;Ã³iμèÒș æ
·Oèà^axèlAμèlIAUè;N⁰à³Å×èlI§μlA^{3/4}OÇàμlAìà»ç¹ã»lAèOșÅèÒ^aéÒÁ
Ô;ã¹ç³Ð·Oè³àÅé¹à;A

OpenGL
GL_KTX_buffer_region a é

3D

GL_KTX_buffer_region extension

"Enable buffer region extension"

i.ÔÃ;ÓË¹´ãËéãªé;ÔÂàµíÃì fast linear-mipmap-linear
ĐªeCAà³⁄₄OèA»ÃĐÊÔ·, OAO³⁄₄çÍŞáI»³⁄₄ÃOàªªN¹ áµèªØ³ÀÒ³⁄₄
çÍŞAO³⁄₄IO`A`AŞ
ã¹ËÃÒÂ æ ;Ã³ÕªØ³ÀÒ³⁄₄çÍŞÀÒ³⁄₄ĐÃ
`ÃšªAèAQ;¹N;`NŞ¹Né¹ªØ³·OŞªCA;OË¹
´ãËéãªéŞO¹ªØ³EAºNµÔ¹Oéà³⁄₄xèIIÖENÂ»ÃĐâÂª¹ì·Ò;»ÃĐÊÔ·, ÔÀÒ
³⁄₄·Oèà³⁄₄OèAçOé¹

μÑÇàÅ×í:1Öé²èÇÃëËé OpenGL ÊÒÁÒÃ¶·Ó¿ÔÅàμίÃì anisotropic
à^{3/4}×èlà^{3/4}ÖèAαØ³AO^{3/4}çI§AO^{3/4}

ãĒéàĀ×Í;μÑÇàĀ×Í;¹Ōéà¾×èĀ;àĀŌ;ĠŌãªéä´ĀàÇĪĀìĒŌĒĀÑªø
ꝛŌENèš¾ŌãĒĒçĪš«Ō¾ŌAU
«Ō¾ŌĀŪºŌš»ĀĐàĀ·Ē¹ÑºĒ¹Ō¹ªŌ´ꝛŌĒĒèš 3D «Ōèšãªéä
é;Nºâ»Āà«Ēà«ĪĀ»ĀĐACĀ¼Ā;ĀŌ;Ō; NVidia
çĪšꝛŌ³áĀĐà¾ŌèĀ»ĀĐĒŌ· ŌĀŌ¾ĀĒĒĒ;ĀĒĀ×Īâ»Āá;ĀĀáĪ»¾ĀŌàꝛª
N¹ 3D μÑÇàĀ×Í;¹ŌéªèÇĀãĒĒꝛŌ³ĒŌĀŌĀĪĒENèšĀ;àĀŌ;ĠŌãªéªø
ꝛŌENèš 3D ¾ŌàĒĒĒĒĒĒŌ¹Ōéã¹ã´ĀàÇĪĀĪ
«ŌèšĀŌ»ĀĐĀĀªĪ¹;ŌĀà»ĀŌĀª·ŌĀª»ĀĐĒŌ· ŌĀŌ¾ĒĒ×Īãªéã¹;ŌĀ
áĪé»NEŌ

μÑÇàÅ×Í;¹Õé¨Đ;ÓË¹´;ÒÃÅ.ÃÍÂËÑ;ã¹Ë¹éÒ¨.ÍáººàµçÁÊÓËÑºä
ÀÇÍÀ; OpenGL ;OAA´AIAEÑ;à»ç¹à·¸¹O¸·Oëãªëã¹;OAáµéç¹º
çÍÍ;ª ;µãEéàAOAºà¾×èIA´¨àEAOéAAáººçNé¹ºN¹ã
AOAã¹AO¾¾" «Oèç»AO; ãEéàËç¹ã¹ºOç¸ANés

µÑÇàÅ×í; ÑÖëãªé; ÖË¹´ÇèÒ¾¼×é¹¼ÔÇ·ÖèÁÖÃÐ´ÑºËÖ¹Ñé¹ æ
Ð¹ÖAOãªéã¹â»Aâ; AAá¹»¾¼ÅÖàªªN¹ OpenGL ÉÅ×láAè

µÑÇàÅ×í; **Use desktop color depth** à»ç¹; ÒÃ; ÖË¹´ãËéãªéÃÐ
NºEOà´ÖAÇ; Nºà´É; ì·l»ç¹ç¹ÇO¹â´ÇÉì

µÑÇàÅ×í; **Always use 16 bpp** áÅÐ. **Always use 32 bpp**
à»ç¹; ÖA; ÖË¹´ãËéãªéÃÐ´NºEO·Öè; ÖË¹´ à´AàAè
ç¹Öé¹; Nº; ÖAµNéçªèÖç¹ç¹à´É; ì·l»

μÑÇàÅ×í;¹ÕëãªéÃÐºØâĒÁ´;ÒÃ·ÓŞÒ¹ buffer flipping
ãĒĒ;ÒA·ÓŞÒ¹áººàµçAE¹éO´ÍçÍŞáI»¾¼ÅOàαªN¹ OpenGL
â´ÂαØ³ÊÒÁÒÃ¶àÅ×í;ãªéÇÔ·Õ¶èÒÂâÍ¹çéÍÁUÁáºººÁçÍα (Block
Transfer) à¾¼;¿ÁO» (Page Flip) EA×IàÅ×í;INµâ¹ANµO (Auto-select)
icã´é μÑÇàÅ×í; "àÅ×í;INµâ¹ANµO" "Ð·OãĒëã
´ÁàÇIAIàÅ×í;ãªéÇO, O·Oè´O·OèEØ´µOΑαεOαI¹;Ô;çÍŞÎÒÀì´áÇÃì

μÑÇàÅ×Í;¹Õéãªé;ÓË¹´;ÒÃ«ÔŞâαÃä¹«ìá¹ÇμÑέŞã¹â»ÃÁ;ÃÁ OpenGL

μÑÇàÅ×Í; **Always off** ¨ĐÂ;àÅÔ;ì;ÒÃ«ÔŞâαÃä¹«ìá¹ÇμÑέŞ
çÍŞáí»¾¼ÀÒàαªN¹ OpenGL ·ÑέŞEA

μÑÇàÅ×Í; **Off by default** ¨ĐÄÁèãªé;ÒÃ«ÔŞâαÃä¹«ìá¹ÇμÑέŞ
¹;ÇèÓáí»¾¼ÀÒàαªN¹ ¨Đ;ÓË¹´ ¨ãÉéãªéŞÒ¹

μÑÇàÅ×Í; **On by default**
¨Đãªé;ÒÃ«ÔŞâαÃä¹«ìá¹ÇμÑέŞà»ç¹αèÒ´Õ;ÍÅμì
¹;ÇèÓáí»¾¼ÀÒàαªN¹ ¨Đ;ÓË¹´ ¨ãÉéÅ;àÅÔ;ì;ÒÃãªéŞÒ¹

ãĒé°Ñ¹·Öij;ÔÃµÑέξæèÒà»ç¹ "ÃÛ»áºº·Õè;ÓĒ¹´àίξ"
àAxèlºN¹·Öij;ÔÃµÑέξæèOãÁέC
ADºº"Đ¹OæèO¹Né¹ã»à»ç¹AOA;ÔÃµèí·éOÃÃOÀ;ÔÃà´ÔÁ·ÕèÁOÍÁÛè
ĒÃñş"Ò;æØ³ä´é;QÃµÑέξæèÒ·Õè´Õ·ÕèĒØ´ĒOĒÃñºáí»¾ÅÔàæªÑ¹
OpenGL áÁέC;OAºN¹·Öij;ÔÃµÑέξæèO¹Né¹ãÇé
"ĐªèÇAãĒÉææØ³ĒOAOÃµÑέξæèOæí¹;O;OpenGL ä´είÁèOşÃÇ
´àAcÇ;ej¹·Oè"ĐàAOèAãªéã»Aá;AA ã
´AãĒéµéίşµNéξæèOµNÇàÃxίµéOş æ ãĒÁè·Ø;æÃñέξ

ι;ÒÃã^aéá¶^oàÁ×èí^{1a}èÇÃãËé³»ÃÑ^oαÇÒÁËÇèÒς αÇÒÁαÁ^aÑ´
ÉΑ×|αéΟά;ΑΑΟç|śá^{a1}à¹ΑΕΟ·ΟεàΑ×|ǎ´é

ι;ÒÃá;éä
çÉΟã^aé»ÃÑ^oαÇÒÁËÇèÒς·Õéáμ;μèÒς;Ñ¹ÃÐËÇèÒςÃÙ»μέ¹©^oÑ^o;Ñ^o
à|Ομ^{3/4}Øμ·ΟεáÉ´§^{o1}ÍØ»|Α³íáÉ´§^{1/4}Á
«Οé§ΑΟ»ΑÐá^{a1}íáÁ×èí·ΟςΟ¹;Ñ^oá»Ãá;ÃÁ»ÃÐÁÇÁ^{1/4}ÁÃÙ»ÀÒ^{3/4}
à^{3/4}×èláÉéá´éÉÖ·Οé¶|U;μé|ς·ΟéÉØ´(á^aé¹ AU»¶éΟΑ) àΑ×èláÉ
§^{1/4}Á^{o1}·|α|Α^{3/4}ΟÇàμ|Αι

1ί;·Ò;1Õé à;Á 3D ĒÀÒÀà;Á·ÐÁÕ;ÒÃáÉ´§^{1/4}Á·Õèαéí¹çéÒςÁ×´
ι;ÒÃá^{3/4}ΟéΑ×èΟαÇÒΑËÇèÒςáÁÐ/ÉΑ×|αéΟά;ΑΑΟá^{a1}á¹ΑΕΟ·Νé§ÉÁ
·Ð^aéÇΑãËéΑΟ^{3/4}ã¹á;ΑËÇèÒςçΟé¹ αØ³·Ο§ΕΟΑΟΑ¶|áÁé¹à;Αá´é´Ο
çΟé¹

α0³ÉÒÁÒÃñàÅ×íjá^{a1}à¹ÅÊÖä´éâ´Âã^aéáñ^oàÅ×è¹
·NéξANξEOAOAñ»AN^oá^{a1}à¹AEOá ξ EOàçOAC EAXÍÊÖ¹éÓàξÔ¹ä´éâ
´ΑμΑξ EAXÍ·Đ»AN^o·Néξ 3 á^{a1}à¹A^{3/4}AéIA æ ;N¹;çä´é

ĩÃÒ;áÊ´šªèÇŞÊÕ àÊé¹âæés¹Õé¨ĐáÊ
§¹⁄₄Ā;OĀà»ĀŌèA¹á»ĀŞ·N¹·Ō·ŌèæØ³»ÃÑºæèŌæÇÒÁæÁªÑ´
æÇŌAÉÇèŌŞ EA×ÍæèŌã;AAO

ÃÒÂ;ÒÃ;ÒÃµÑέξæèÒ·Õèæ³⁰Ñ¹·Ö;äÇé
ãÉéàΑ×|;µΝÇàΑ×|; Ò;ΑΟΑ;ΟΑà^{3/4}×είàÃÕÂ;ã^aέξÒ¹;ÒÃµÑέξæèÒ·Õ
έμείξ;ΟΑ

πϑ³ÉÒÁÒÃ¶^ºÑ¹·Öj;ÒÃμÑέξæèÒÊÕ»Ñ^ˆ·ϑ^ºÑ¹·äÇéà»ç¹·ÃÙ»á^{ºº}·Õè;ÓË
1^ˆ·àšä é àA×èl^ºÑ¹·Öj;ÒÃμÑέξæèÒáÁέÇ·ΑΔ^{ºº}·Đ¹·OæèO¹·Né¹·ä»à»ç¹
ÃÒΑ;ÒΑμèl·έOÃΑÒΑ;ÒΑà^ˆ·ÒΑ·OèΑOÍΑUè

ÅºÃÒÂ;ÒÃ;ÒÃµÑέξæèÒÊÕ·Õèä´éàÅ×Í;äÇé¨Ò;ÃÒÂ;ÒÃ

ã^aéÃÙ»á^oÊÕ´Õ¿ÍÅμìϕÍ§ÍÒÃì´áÇÃì

ã^aéàÅ×í;âËÁ´ä·ÁiÁÔèςçÍ§¨ÍÀÒ¾

μÑÇàÅ×í; **Auto-Detect** ã^aéã¹;ÒÃ;ÓË¹´ãËéçÔ¹â

CEIAN^oæO·OèàEAOÐÉA´O;ÍáE´§¼Aâ´AμA§

«Oè§μÑÇàÅ×í;¹Oé·Ðã^aéà»ç¹æO´O;ÍAμíã»A

·AO^oçèO¨ÍAO¾AØè¹à;èO^oO§AØè¹ÍO¨ãAèEOÁOÃ¶ã^aéæØ³ÊÁ^oÑ
μO¹Oéã´é

μÑÇàÅ×í; **General Timing Formula** ËÃ×Í **GTF**

à»ç¹μÑÇàÅ×í;·OèAN;ã^aé;N^oÍOAI´áÇAIÁØè¹ãEAè æ

μÑÇàÅ×í; **Discrete Monitor Timings** ËÃ×Í **DMT**

à»ç¹AOμA^oO¹AØè¹à;èO·OèAN§æã^aéã¹IOAI´áÇAI^oO§ÃØè¹

ãËéã^aé§O¹μÑÇàÅ×í;¹OéEO;IOAI´áÇAIçÍ§æØ³μéÍã^aéâEA´ DMT

à¾ÔèÁäíí¹ NVidia QuickTweak äÇé·Õè·ÒÊìºÒÃìçÍŞÇÔ¹â´ÇÊì
äíí¹¹Õéãªé;ÓË¹´ÃÙ»áºº Direct3D, OpenGL ĘÃ×Í;ÒÃµÑéŞæèÒÊÕ
´éÇÂµ¹àîŞ"ã, éíÀèOŞAC´àAcC" ¨O;àA¹U»êl»JN» ¹í; O;¹Oé
àA¹U¹OéANŞAOAOA;OAEÓEANºãªéæèO´O;íÀµiáÃĐàAÓA;ãªéä
´IDÄçl; 'æØ³EAºNµO;OAáE´Ş¼Å'

α0³ÊÒÁÒÃñàÅ×Í;äíαí¹ÊÓËÃÑºãªéá·¹ÂÙ·ÔÅÔμÕ QuickTweak
º¹·ÔË;ìºÔΑιçIŞÇÖ¹ã ÇËiã´é
àÅ×Í;äíαí¹·ÕèμέIξ;ÒÃ¨Ò;ÃÒÂ;ÒÃ¨Ò;¹Ñé¹ αÅÔ; "OK" ËÃ×Í
"Apply" à¾¼×éIIN»à μäIαí¹º¹·ÔË;ìºÔΑι

»Ô´ä´ÍĐĂċĭ;¹ŦéáĂĐºÑ¹.Ö:ĭ:ÒĂà»ĂŦèĀ¹á»ĂşăCé
áµè¼Āĭ;ŦĂà»ĂŦèĀ¹á»Ăş ĐĂŦ¼ĀĒĂŦş Ŧĭ;ŦŦ³ŦĂŦ; "OK" ĒĂxÍ
"Apply" ä¹
ä´ÍĐĂċĭ; "Additional Properties"

ãĒéα∅³;ÓĒ¹'ÇèÒ"Đãªé»ØèÁã
çİşàAOĒİàĀŌĀ;àĀ¹UàĀ×èĀŌ;ŌĀαĀŌ;ŌèäĀı¹Ō¹.ŌĒ;ìºŌĀì

à»Ô´ËÃ×Í»Ô´φείαÇÒÁÂ×¹ÃÑ¹
à²çμÑCàÅ×Í;¹Öé ËÒ;πØ³äÀèμεί§;ÒÃãËéáÊ´§
φείαÇÒÁÂ×¹ÃÑ¹·Ø;πANés·OèãEÀ πl¹;Oà;làA²Ñ¹ 3D
O;àA¹U·OÉ;ìºOÄi

àÅxÍµÑçàÅxÍµ¹Öé ËÖ;ϣ³μέíς;ÒÃάÊ´§^{1/4}ÀàÁ¹Ù·ÒÊ;ì^ºÒÃì
éÇÃαλζαζιμι 3D

μÑÇàÅ×í:1Öëã^aé:ÓË¹´μÓáË¹èξ;ÒÃáÊ´SÀÒ^{3/4}ο¹´´Íá^{ο1}
àA×él:QξQ¹·OèαÇOAAĐàíOÁ´μεO;ÇeOαÇOAAĐàíOÁ´ÊUξÊØ
·OèEOAOA¶ã^aéã´e

ã^aé»ØèÁÅÛ;ÈÃà^{3/4}×èí»ÃÑ^oμÓáË¹èςφίς^{3/4}×é¹.Õèà´Êì·í»^{o1}··íaÊ
ς^{1/4}Å

ÃÕà«çµæèÒà´Êµ:Í»à¾¼×èĩã^aéæèÒ´Õ¿ÍÅµìçÍ§æèÒæÇÒÁÅÐàíÕÂ
´áÅÐÍΝµΑΟ;ΟΑΑΟà¿Α^a»N¹ Ø^oN¹

μÑCàÅ×í;àËÀèÒ¹Õéã²é;ÓË¹´»ÃĐàÀ·çííØ»;Ã³ìàíÒμì¾¼Øμ (¨íÀÒ¾
íá^{σ¹} ÉA×íâ·A·NE¹íâ´AçÓé¹íÀUè;NºíØ»;A³·í·Òè;OAI IE¹NºE¹Ø¹)

à»Ô´Ë¹éÔμèÒξà³/₄χèίμÑέξπèÔμèÒξ æ ϕίσιØ» ;Ã³ιάÊ
ξ¹/₄Å·Ôě²έξO¹IAUè

ÃĐ°ØÃÙ»á°°áÃĐ»ÃĐà·È·Õèã°é;ÒÃáÊ´§¼Å·Òșâ·Ã·ÑÈ¹ì

à»Ô´Ë¹éÒµèÒ§à¾¼×èÍÃĐºØÃÙ»áºº;ÒÃáÊ´§¾¼Å·Ò§â·Ã·ÑÈ¹ì

ÃÒÂ; ÒÃ¹ÕéãéàÅ×Í; ÃÙ»áºº; ÒÃáÊ
´§¼Å·Ôâ·A·NE¹µÔA»AÐà·È·ÔèæØ³ÍÂÙèíÒÈÑÂ
ÈÁÒÂàÈµØ: ÈÒ; »ÃÐà·È·ÕèæØ³ÍÂÙèäÁè»ÃÒ; ́ÍÂÙèã¹ÃÒÂ; ÒÃ
ãÈéàÅ×Í; »AÐà·È·ÔèÍÂÙèã; Áé»AÐà·È·ÔèæØ³ÍÂÙèAÒ; ·ÔèÈØ´

¡ÓË¹´ãËéÃÙ»áºº·ÕèàÅ×Í;à»ç¹ÃÙ»áºº·ÕèãªéàÁ×èlà»Ô´àãÃ×èí§
àÁ×èlà»Ô´àãÃ×èí§πÍÁ¾ÔÇàμÍÀ·Õèàª×èÍÁμèÍâ·Ã·ÑÈ¹ìà
çéO;Nº;OÃì´.ì´μNÇàÅ×Í;¹OéªèÇAãEéANè¹ã´ã´éçèO
çéìãCOA·Né§EÁ·OéãE
¹º¹´ÍAO¾AÐÉÇèÒ§;AÐºÇ¹;ÒÃºÙμ´Ð»ÃÒ;¹º¹´Íâ·Ã·ÑÈ¹ìÍÀèÒ§¶Ù;μé
Í§

ã^aé;ÓË¹´^a1Ô´çÍŞËÑÒ³àíÒµì³/₄Øµ·ÕèÊèŞ¹/₄èÒ¹ã»ÂÑşâ·Ã·ÑÈ¹ì
ËÒ;κØ³ä´éà^a×èÍÁµèíâ´Âã^aéÊÔÀ^aκ^oÔÅ·Õè¶Ù;µéíŞ ^a1Ô´ÊÑÒ³á^{oo}
S-Video out ˆĐãÉéκØ³AO³/₄EUŞ;ÇèQËNO³á^{oo} Composite video out
EO;κØ³äAéá¹èã´à;ÖèAC;N^oa¹Ô´çÍŞËNO³ãÉéàÅ×Í; **Auto-select**

ã^aé»ØèÁÀÛ;ÉÃ»ÃÑ^oμÓáĚ¹èšà´Ê;ì·Í»^{o1}·î·Ã·ÑĚ¹ì

ĚÁÒĀàĚμØ:

ĚO;AO^{3/4}ã¹â·Ã·ÑĚ¹ìĀéÁĚĀ×ĭäĀèÁŌĀŌ^{3/4}à¹xèš"Ò;ì;ÒĀ»ÃÑ^oμ
Nés ãĚéAĭ»AĐAO³ 10 ÇO¹Ō·Ō·AO^{3/4}·Đ;ĀN^oAOáĚ
'š^{1/4}Ā·ŌèμŌáĚ¹èš·Ōèà»ç¹·Ō;ĭĀμĭâ·ĀĬNμâ¹ĀNμŌ
"Ō;¹Né¹æ³ANŞEOAOĀĭĭāŌŌèA·Ō;ŌĀ»ĀN^oμNéšæèŌãĚĀèĭŌ;æ
ĀNés ĒĀNŞ·Ō;ŌĒ¹μŌáĚ¹èšçĭšà´Ê;ì·ĭ»áĀeÇ
æŌ³μéĭšæĀŌ;Ōè»ØèA "OK" ĒA×ĭ "Apply"
à^{3/4}xèĭ^oN¹·Ō;æèŌĀŌĀã¹àçĀŌ 10 çŌ¹Ō·Ō

ÃÕà«çµà´Êj·Í»ä»ÂÑşµÓáË¹èş´Õ¿ÍÅµìº¹â·Ã·ÑÈ¹ìâ
´ÃãªéαÇOAAĐàIOA »N 0ºN¹

ã^aéµÑÇººØÁàËÀèÒ¹Öéã¹¡;ÒÃ»ÃÑººÇÒÁÊÇèÒŞáÅĐºÇÒÁÍÔèÁµ
ÑÇç¡ŞEOç¡ŞAO^{3/4}ã¹â·A·NE¹¡

ã^aéµÑÇꝛC^oꝛØÁàËÅèÒ¹Õéã¹;ÒÃ»ÃÑ^oꝛÇÒÁÊÇèÒŞáÅĐꝛÇÒÁꝛÁ^aÑ
çIŞAO^{3/4}ã¹â·A·NE¹i

ã^äéµÑÇκC^ºαØÁ¹Õéà^¾×èí»ÃÑ^º;ÔÅàµíÃìÅ´;ÒÃÊÑè¹
ϕÍΣΑΟ^¾·ÔèµéíΣ;ΟΑã^äé;Ñ^ºâ·Α·ΝΕ¹ì
ϕÍá¹Ð¹ÓãËéαØ³»Ô´;ÔÅàµíÃìÅ´;ÒÃÊÑè¹
ϕÍΣΑΟ^¾àΑ×èìàÅè¹ΑΟ^¾Α¹µΑì DVD "Ο;|Ø»;Ã³ì¶Í´ÃËÑÊϕÍΣÌÒÃì
άÇΑì

¡ÓË¹'ꝤÇÒÁÅĐàíÕÂ'çÍ§''íáÊ'§¼ÅáÅĐÃĐ'ÑºÊÕă¹;ÒÃáÊ
§¼Å·Õ§''íâ·A·NE¹

ã^aéµÑÇπC^oπØÁàËÅèÒ¹Õéã¹;ÒÃ»ÃÑ^oπØ³ÀÒ^{3/4}çÍŞËÑÒ³ÇÔ´ÕâíËÃ×í
DVD ^{o1}·ÍÁO^{3/4}

πØ³ËÒÁÒÃ¶πÇÁπØÁπèÒπÇÒÁËÇèÒŞπÇÒÁπÁ^aÑ´
πèÒπÇÒÁÍÒèÁµÑÇçÍŞËOà^{3/4}×èíπØ³ÁO^{3/4};ÒÁáE´Ş^{1/4}Å·Õè
´ÒàA×èlàÀè¹AO^{3/4}A¹µAì DVD ã¹àπA×èíŞπIA^{3/4}OÇàµíAì

ã^aé»ÃÑ^ºçCÒÁ¶.ÕèÊÑÒ³¹ÒìÔ;ÒËÃÑ; áÅÐÊÑÒ³¹ÒìÔ;Ò
çÍŞE¹èÇÃçCOA' OçÍŞâ»Ãà«Eà«IAi»AĐAÇÁ^{1/4}Á;ÃO¿;Ô;çÍŞ NVidia ä´é

¡ÓË¹´¸CÒÁàÃçÇÊÑ-
Ö³¹ÒìÖ¡ÖÉÄÑ¡ç¡šâ»Ãà«Êà«ÍÃì»ÃĐÁÇÅ¼Å¡ÃÒ¿Ô¡ NVidia

ÃĐ°ØꝥÇÒÁàÃçÇÊÑÒ³¹ÒìÔ;ÒËÅÑ;à»ç¹àÁ;ĐàíÔÃµ«ì

¡ÓË¹´ϣÇÒÁàÃçÇÊÑÒ³¹ÒìÔ;ÒϕÍÍÔ¹àμίÃìà;«Ë¹èÇÂϣÇÒÁ´´Óº¹;ÒÃì
áE´§¹⁄₄Ã

ÃĐ°ØαÇÒÁàÃçCÊÑÒ³¹ÒìÔ;Ò
ç|§ÍÒ¹àμίΑìà;«E¹èÇΑαÇΟΑ`Οà»ç¹àÁ;ĐàÎÔÃμ«ì

·´Êí°αCÒÁàÃçCÉÑÒ³¹ÒìÔ;ÒãËÁèà^{3/4}xèí·´Êí°àÊ¶ÕÃÀÒ^{3/4}
ϕΙΣΑΔ^σιελ¹ã^αεξΟ¹··ΑΟΣ
ΕΑΟΑÈΕμΘ: αθ³μέις·´Êí°;ÒÃμÑέςαèÒãËÁè«ÖèξãÁèã^αèαèÒ
´Ο;ΙΑμιϕΙΣ^{1/4}Ué^{1/4}ΑΟμιελ¹·Οè Ðã^αέαèΟ¹Νέ¹μΑΙ´α»

i ÒÃ à Å x í ; µ Ñ Ç à Å x í ; 1 Ò é à è Ç Ã Æ é Á Ñ è 1 ã ¨ ä
é C è O ; O A à » Á O è A ; µ Ç O A à A ç C E N O 31 O I O ; Ò ¨ Ð Á Ò 1/4 Å ã è é Ñ O 1 â
Á Ñ µ â 1 A N µ O · Ø ; µ A N è Ñ · O è à Á O è A ã è é Ñ O 1 Ç Ô 1 â Ç È Ì
È Á Ô À È µ Ø : µ Ø 3 È Ô Á Ô Ñ ¶ ç é Ô Á ç Ñ é 1 µ í ; Ò Ã µ Ñ è Ñ È Ñ -
O 31 O I O ; O I N µ â 1 A N µ O · O è · O Ñ O 1 ç 3 Ð à Á O è A µ é 1 A Ð ° ° ä ´ é â
Á ; O A ; µ O A Ì < Ctrl > µ é O Ñ à Ç é ç 3 Ð · O è Ç O 1 â
Ç È Ì ; O Ñ Ñ Ñ à A Ô è A · O Ñ O 1
Ë Ö ; à µ A x è Ñ µ I A 3/4 Ô Ç à µ í Ñ à à µ x è í Á µ è í Á Ò è ; Ñ ° à 1 ç µ à Ç Ô Ñ Ì ; ã È é ;
µ O A Ì < Ctrl > µ é O Ñ à Ç é · N 1 · Ô È Á Ñ Ñ ¨ O ; à ´ é Å ç Ì Ì 1 â
ç é O È U è Ç O 1 â Ç È Ì

ÃÕà«çµÊÑÒ³¹ÒìÔ;Ò:ÑésËÁ´ áÅéÇãËéÃĐ^{oo}µÃÇ´ÊíôíÒÃì
´áÇÀì;AO;Oììèl¹·Oè Ñã^aésO¹µNCçç^oçØÁ·Oè;OE¹´äÇélÕ;çÃÑés
çl¹Ð¹ÓãËéçØ³ÃÕà«çµ:Ø;çÃÑés·Õèá;Å^a BIOS çlç;ÒÃì´´í â
´Aã^aéã;ÅìlOAàA´EOEAN^olN»à´µ BIOS

