Cornell University CS 569: Interactive Computer Graphics

Imaging in the GPU

Lecture 10

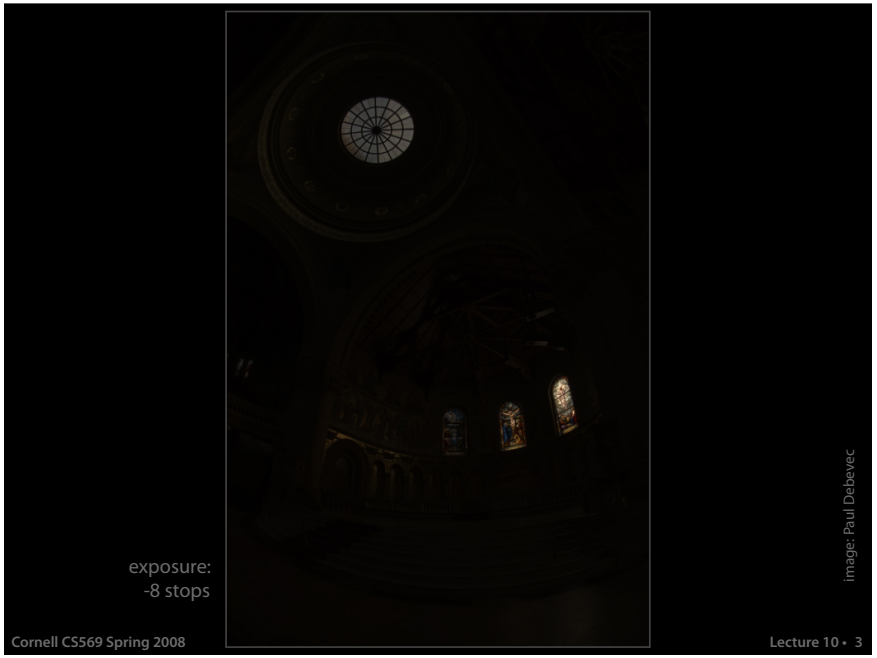
Announcement: DreamWorks visit

Time: Wednesday February 27, 2008, 4:45PM

Location: 551 Rhodes Hall

Title: PDI/Dreamworks Animation Presentation

Speaker: Beth Hofer



exposure:
+6 stops

image: Paul Debevec

OpenGL Internal Pixel Formats

Sized Internal Format	Base Internal Format	*R* bits	*G* bits	*B* bits	*A* bits	*L* bits	*I* bits	*D* bits
ALPHA4	ALPHA				4			
ALPHA8	ALPHA				8			
ALPHA12	ALPHA				12			
ALPHA16	ALPHA				16			
DEPTH_COMPONENT16	DEPTH_COMPONENT							16
DEPTH_COMPONENT24	DEPTH_COMPONENT							24
DEPTH_COMPONENT32	DEPTH_COMPONENT							32
LUMINANCE4	LUMINANCE					4		
LUMINANCE8	LUMINANCE					8		
LUMINANCE12	LUMINANCE					12		
LUMINANCE16	LUMINANCE					16		
LUMINANCE4_ALPHA4	LUMINANCE_ALPHA				4	4		
LUMINANCE6_ALPHA2	LUMINANCE_ALPHA				2	6		
LUMINANCE8_ALPHA8	LUMINANCE_ALPHA				8	8		
LUMINANCE12_ALPHA4	LUMINANCE_ALPHA				4	12		
LUMINANCE12_ALPHA12	LUMINANCE_ALPHA				12	12		
LUMINANCE16_ALPHA16	LUMINANCE_ALPHA				16	16		
INTENSITY4	INTENSITY						4	
INTENSITY8	INTENSITY						8	
INTENSITY12	INTENSITY						12	
INTENSITY16	INTENSITY						16	
R3_G3_B2	RGB	3	3	2				
RGB4	RGB	4	4	4				
RGB5	RGB	5	5	5				
RGB8	RGB	8	8	8				
RGB10	RGB	10	10	10				
RGB12	RGB	12	12	12				
RGB16	RGB	16	16	16				
RGBA2	RGBA	2	2	2	2			
RGBA4	RGBA	4	4	4	4			
RGB5_A1	RGBA	5	5	5	1			
RGBA8	RGBA	8	8	8	8			
RGB10_A2	RGBA	10	10	10	2			
RGBA12	RGBA	12	12	12	12			
RGBA16	RGBA	16	16	16	16			

Sized internal formats continued on next page

Sized internal formats continued from previous page

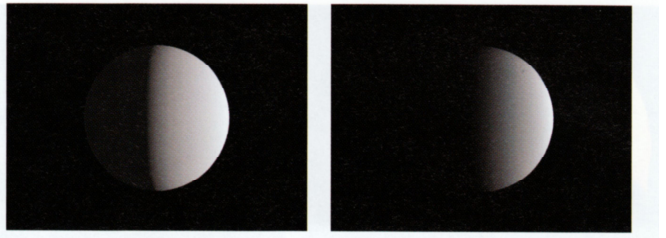
Sized Internal Format	Base Internal Format	*R* bits	*G* bits	*B* bits	*A* bits	*L* bits	*I* bits	*D* bits
SRGB8	RGB	8	8	8				
SRGB8_ALPHA8	RGBA	8	8	8	8			
SLUMINANCE	LUMINANCE					8		
SLUMINANCE_ALPHA8	LUMINANCE_ALPHA				8	8		

Sized Internal Format	Base Internal Format	R bits	G bits	B bits	A bits	L bits	I bits
RGBA32F_ARB	RGBA	f32	f32	f32	f32		
RGB32F_ARB	RGB	f32	f32	f32			
ALPHA32F_ARB	ALPHA				f32		
INTENSITY32F_ARB	INTENSITY						f32
LUMINANCE32F_ARB	LUMINANCE					f32	
LUMINANCE_ALPHA32F_ARB	LUMINANCE_ALPHA				f32	f32	
RGBA16F_ARB	RGBA	f16	f16	f16	f16		
RGB16F_ARB	RGB	f16	f16	f16			
ALPHA16F_ARB	ALPHA				f16		
INTENSITY16F_ARB	INTENSITY						f16
LUMINANCE16F_ARB	LUMINANCE					f16	
LUMINANCE_ALPHA16F_ARB	LUMINANCE_ALPHA				f16	f16	

Table 3.16: Correspondence of sized internal formats to base internal formats, and desired component resolutions for each sized internal format. The notation <f16> and <f32> imply 16- and 32-bit floating-point, respectively.

(FP formats are currently part of ARB_texture_float)

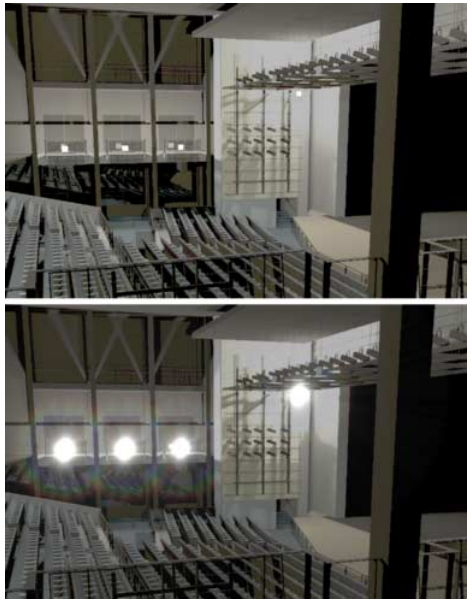
Gamma correction and illumination



(a) (b)

Figure 24-3. A Linear Image Gamma-Corrected (*Left*) and Uncorrected (*Right*)
The more physically correct, desired result is on the left. You can see that the light falloff, especially near the shadow terminator, is very different.

GPU Gems 3



Spencer et al. 1995