Johann Heinrich Lambert

Johann Heinrich Lambert, o Jean-Henri Lambert (26 de agosto de 1728 - 25 de septiembre de 1777), fue un matemático, físico, astrónomo y filósofo alemán de origen francés. Nació en Mülhausen (ahora Mulhouse, Alsacia, Francia) y murió en Berlín. Demostró que el número π es irracional, usando el desarrollo en fracción continua de tanx, con lo que cerró la posibilidad de poder determinar una expresión "exacta" (fracción numérica o cociente de dos enteros) para este número.1​ También hizo aportes al desarrollo de la geometría hiperbólica y de la astronomía, desarrollando un método para calcular las órbitas de los cometas y el teorema de Lambert.

Ley de Lambert

La ley de Lambert trata sobre la iluminancia de una superficie situada a una cierta distancia de una fuente de luz. Determina que la iluminación producida por una fuente luminosa sobre una superficie es directamente proporcional a la intensidad de la fuente y al coseno del ángulo que forma la normal a la superficie con la dirección de los rayos de luz y es inversamente proporcional al cuadrado de la distancia a dicha fuente

Esta ley expresa la relación entre absorbancia de luz monocromática (de longitud de onda fija) y concentración de un cromóforo en solución.

Shader Lambert

The Lambert lighting model

The Lambert lighting model incorporates ambient and directional lighting to shade objects in a 3D scene. The ambient components provide a base level of illumination in the 3D scene. The directional components provide additional illumination from directional (far-away) light sources. Ambient illumination affects all surfaces in the scene equally, regardless of their orientation. For a given surface, it's a product of the ambient color of the surface and the color and intensity of ambient lighting in the scene. Directional lighting affects every surface in the scene differently, based on the orientation of the surface with respect to the direction of the light source. It's a product of the diffuse color and orientation of the surface, and the color, intensity, and direction of the light sources. Surfaces that face directly toward the light source receive the maximum contribution and surfaces that face directly away receive no contribution. Under the Lambert lighting model, the ambient component and one or more directional components are combined to determine the total diffuse color contribution for each point on the object.

Before you begin, make sure that the Properties window and the Toolbox are displayed.

1. Create a DGSL shader with which to work. For information about how to add a DGSL shader to your project, see the Getting Started section in Shader Designer.
2. Disconnect the Point Color node from the Final Color node. Choose the RGB terminal of the Point Color node, and then choose Break Links. Leave the Alpha terminal connected.
3. Add a Lambert node to the graph. In the Toolbox, under Utility, select Lambert and move it to the design surface. The lambert node computes the total diffuse color contribution of the pixel, based on ambient and diffuse lighting parameters.
4. Connect the Point Color node to the Lambert node. In Select mode, move the RGB terminal of the Point Color node to the Diffuse Color terminal of the Lambert node. This connection provides the lambert node with the interpolated diffuse color of the pixel.
5. Connect the computed color value to the final color. Move the Output terminal of the Lambert node to the RGB terminal of the Final Color node.

Phong

The Phong reflection model (also called Phong illumination or Phong lighting) is an empirical model of the local illumination of points on a surface. In 3D computer graphics, it is sometimes referred to as "Phong shading", in particular if the model is used with the interpolation method of the same name and in the context of pixel shaders or other places where a lighting calculation can be referred to as “shading”.

Blinn-Phong

The Blinn–Phong reflection model, also called the modified Phong reflection model, is a modification developed by Jim Blinn to the Phong reflection model.

Blinn–Phong is the default shading model used in OpenGL and Direct3D's fixed-function pipeline (before Direct3D 10 and OpenGL 3.1), and is carried out on each vertex as it passes down the graphics pipeline; pixel values between vertices are interpolated by Gouraud shading by default, rather than the more computationally-expensive Phong shading.