Тема:
Методы трассировки лучей

Методы Монте-Карло

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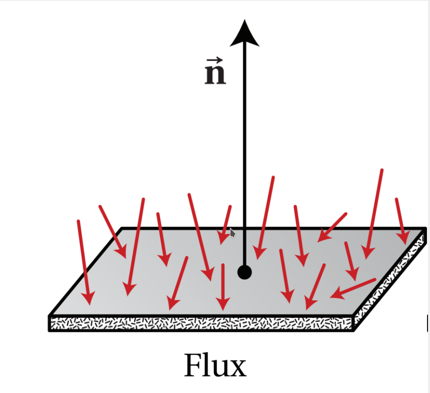
Основные понятия.

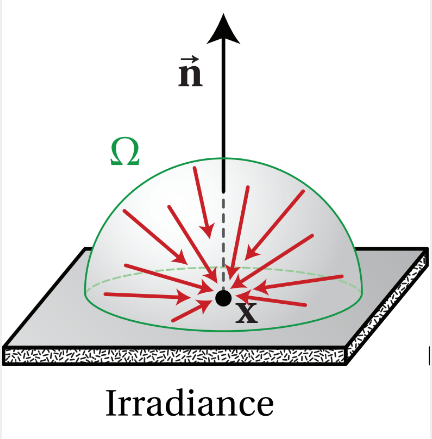
Поток

Поток излучения обозначается - Φ(Flux).



Интенсивность излучения

Интенсивность излучения обозначается - E(Irradiance).
$E = \frac{d\Phi(x)}{dS(x)}$



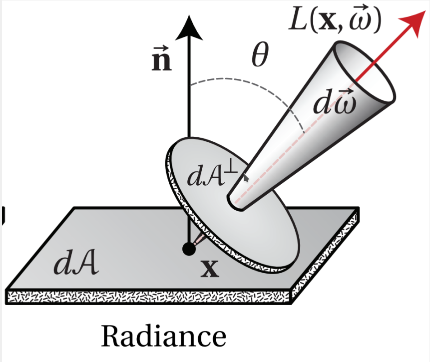
Светимость

Светимость обозначается - L(Radiance).

$L(x,\omega) = \frac{d^2\Phi(x)}{d\omega(x)dA^{\perp}(x)}$

Можно переписать это уравнение в виде:

$L(x,\omega) = \frac{d^2\Phi(x)}{d\omega(x)dA(x)(\omega,n)} = \frac{d^2\Phi(x)}{d\omega^{\perp}(x)dA(x)}$



Связь между этими величинами:

$L(x,\omega) = \frac{d^2\Phi(x)}{d\omega(x)dA^{\perp}(x)}$;
$L(x,\omega)d\omega(x)dA^{\perp}(x) = d^2\Phi(x)$;
$\Phi(x) = \int_A \int_\Omega L(x,\omega)d\omega(x)dA^{\perp}(x) = \int_A \int_\Omega L(x,\omega)(\omega,n)d\omega(x)dA(x)$
Получили выражение для потока через светимость.

Также можем выразить интенсивность излучения через светимость.
$E(x) = \int_\Omega L(x,\omega)(\omega,n)d\omega = \int_\Omega L(x,\omega)d\omega^{\perp}$

BRDF

Bidirectional reflectance distribution function. Эта функция описывает насколько "ярко"выглядит поверхность с направления ω.

$$f_r(x, \omega_1 \to \omega) = \frac{dL(x \to \omega)}{dE(x \leftarrow \omega_1)} = \frac{dL(x \to \omega)}{L(x \leftarrow \omega_1)(n, \omega_1) d\omega_1}$$

Основное уравнение рендеринга.

Bidirectional reflectance distribution function. Эта функция описывает насколько "ярко"выглядит поверхность с направления ω.

$$f_r(x, \omega_1 \to \omega) = \frac{dL(x \to \omega)}{dE(x \leftarrow \omega_1)} = \frac{dL(x \to \omega)}{L(x \leftarrow \omega_1)(n, \omega_1) d\omega_1}$$

This is a slide with the plain style and it is numbered.

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No Slide Numbering

This slide is not numbered and is citing reference [?].

Typesetting and Math

The packages inputenc and FiraSans[1,2] are used to properly set the main fonts.

This theme provides styling commands to typeset *emphasized*, alerted, **bold**, example text, . . .

FiraSans also provides support for mathematical symbols:

$$e^{i\pi} + 1 = 0.$$

Blocks

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Block

Text.

These blocks are part of 1 slide, to be displayed consecutively.

Block

Text.

Alert block

Alert text.

Blocks

These blocks are part of 1 slide, to be displayed consecutively.

Block

Text.

Alert block

Alert text.

Example block

Example text.

Columns

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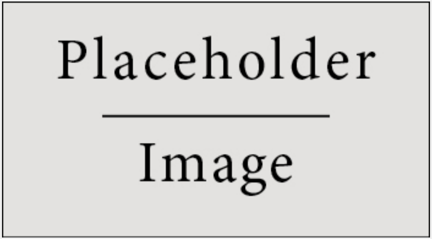

Lists

Items:

- Item 1
  - Subitem 1.1
  - Subitem 1.2
- Item 2
- Item 3

Enumerations:

1. First
2. Second
   2.1 Sub-first
   2.2 Sub-second
3. Third

Descriptions:

First Yes.

Second No.

Table

Discipline	Avg. Salary
Engineering	\$66,521
Computer Sciences	\$60,005
Mathematics and Sciences	\$61,867
Business	\$56,720
Humanities & Social Sciences	\$56,669
Agriculture and Natural Resources	\$53,565
Communications	\$51,448
Average for All Disciplines	\$58,114

Таблица: Table caption

Thanks for using Focus!

References

Backup Slide

This is a backup slide, useful to include additional materials to answer questions from the audience.

The package appendixnumberbeamer is used to refrain from numbering appendix slides.