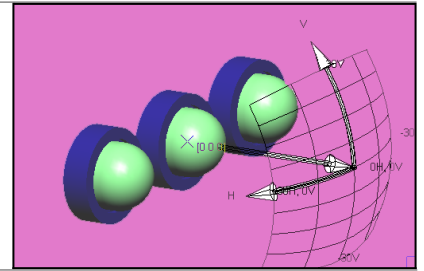


CO4 | Lighting and illumination with Lighttools



NIVEAU : AVANCÉ

Publics : People working in design offices, R&D units, interested by domestic or public lighting

Prérequis :

Responsable(s) pédagogique(s) : Lionel Jacobowicz - Chargé de cours à l'Institut d'Optique

Langue de la formation : Français

Capacité maximum : 10

Prix : 1380€ HT - **Durée :** 3 days - 21 h

Objectifs

- ▶ Skills photometry and non-imaging optics
- ▶ Understand the methods of photometric computer-aided design
- ▶ Learn how to optimize the photometry of optical systems

Prochaines sessions

- ▶ 08 avril 2019 au 10 avril 2019 - Palaiseau

Thèmes abordés

Sources, surfaces and environments

- ▶ Modeling the optical properties of surfaces
- ▶ Total reflection, scattering, absorption
- ▶ Modeling of light sources

Simulations with Lighttools software

- ▶ Principle of non-sequential ray tracings
- ▶ Study of illumination and intensity maps

Non-imaging optical applications

- ▶ Optics for LED lighting
- ▶ Study of display systems
- ▶ Light guides and concentrators



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Le programme

Reminders in photometry

- ▶ Flux, illumination, intensity, luminance, geometric extent...
- ▶ Physical properties of surfaces and environments, scattering, absorption, refraction, specular reflectance, BRDF
- ▶ Visual photometry (lighting) and radiometry

Photometric computer assisted design

- ▶ Basis for Lighttools : sources definitions, optomechanical structures, optical systems
- ▶ Principe of non-sequential ray tracing. Monte Carlo method
- ▶ Simulation of illumination and intensity maps. Photometric performance.
- ▶ Analysis, optimization methods, definitions of merit functions

Some non-imaging optical applications

- ▶ Simulations of sources, plastic optics for LEDs: collimators, concentrators
- ▶ Obtaining uniform illumination maps: use of light guides and microlens arrays
- ▶ Projector, backlight illumination, screen
- ▶ Simulations of the effect of stray light

Méthodologie et évaluation

Lectures and practical exercises with Lighttools