TECHNISCHE UNIVERSITÄT WIEN
Institut für Computergraphik und Algorithmen
Arbeitsbereich für Computergraphik

OESTERREICHISCHE COMPUTER GESELLSCHAFT
AUSTRIAN COMPUTER SOCIETY

laden gemeinsam zum

GASTVORTRAG

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"Spectral Rendering with RADIANCE for Applications in Lighting Technology"

Abstract:
Physically based rendering packages such as Radiance are widely used in lighting design and architectural illumination planning for simulations of luminance and illuminance distributions or daylight factors. However, spectral rendering is necessary if highly accurate results are desired or industrial standards that can only be computed from spectral power distributions need to be evaluated. Therefore we present the set-up of a spectral version of Radiance based on discrete spectra using 81 values between 380 nm and 780 nm equally spaced at every 5 nm and discuss the re-definition of the brightness function. Using this spectral rendering engine important indices in lighting design can be simulated. We propose an improved color rendering index that uses state-of-the-art colorimetric methods and show how distributions of color rendering indices or correlated color temperatures can be computed in globally illuminated scenes. Finally the evaluation of spectrally rendered images by action spectra other than the luminous efficiency function is exemplified using the circadian action function describing the melatonin suppression and the photosynthesis action spectrum.

Biography:
David Geisler-Moroder received his Diploma degree in Technical Mathematics from the University of Innsbruck, Austria, in 2006. For his thesis on color rendering and color differences he was awarded the scientific prize of the Federal Economic Chamber of Tyrol. From March to June 2009 he was a visiting scholar at the Solar Energy Research Institute of Singapore in the Solar and Energy Efficient Bulidings cluster. He is currently pursuing his PhD degree at the Department of Mathematics at the University of Innsbruck, where he is a research fellow in a project on Visual Computing headed by Arne Dür.

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