

CIE-Publikation 249:2022

Visual Aspects of Time-Modulated Lighting Systems.

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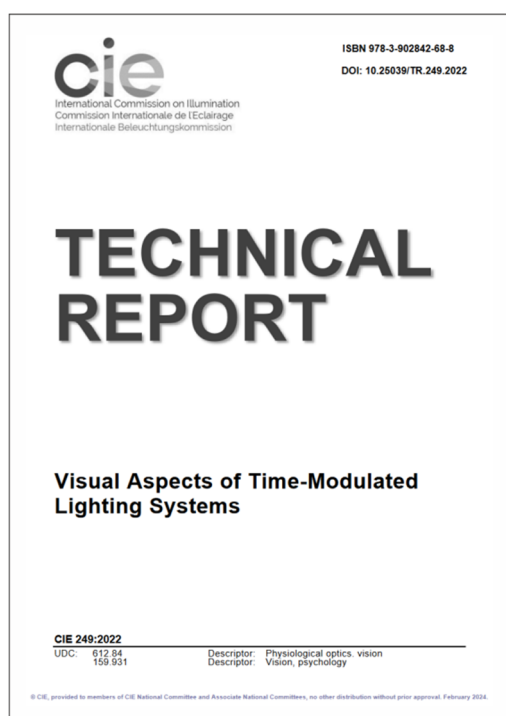
Die LiTG als Mitglied des deutschen nationalen Komitees (NC) der CIE (DNK-CIE e. V.) bietet ihren Mitgliedern bis 31. Dezember 2024 den Kauf der CIE-Publikation 249 zum Sonderpreis eines NC-Mitgliedes an.

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Die Publikation ist in englischer Sprache verfasst und hat folgenden Inhalt:



The fast rate at which solid-state light sources can change their luminous output is one of the main drivers behind the revolution in the lighting industry and applications of lighting. The fast rate of the intensity change means that a modulation of the luminous output, both intended and unintended, is directly linked to the modulation of the driving current. In turn, the light modulation can give rise to distortions in the perception of the environment.

While in some very specific entertainment applications a distorted perception due to light modulation is desired, for most everyday applications and activities the distortion is detrimental and undesired. These changes in the perception of the environment are called "temporal light artefacts" (TLAs) and can have a large influence on the experience of the illumination quality. Moreover, studies indicate that exposure to light exhibiting visible and measurable temporal modulation can lead to a decrease in performance, increased fatigue as well as acute health problems like migraine episodes. The potential negative effect of TLAs has prompted lighting manufacturers, lighting application specialists, universities and governments to look for ways to measure the effect and come to a better understanding of the temporal quality aspects of lighting systems. In this context, the CIE established Technical Committee (TC) 1-83 "Visual Aspects of Time-Modulated Lighting Systems".

In 2016, the CIE published the first output of TC 1-83, Technical Note (TN) 006:2016 "Visual Aspects of Time-Modulated Lighting Systems — Definitions and Measurement Models". This Technical Report builds on this previously published TN. In the first part of the document, the definitions for the perceptual effects that modulated light can produce are given. In the second part, an overview of the relevant literature is given as well as an overview of the parameters that influence the visibility of the different TLAs. The next part gives a description of two methods, one in the frequency domain and one in the time domain, which can be used to quantify visibility of TLAs. Three different implementations of these methods into specific visibility measures are given as an example. After that, practical guidelines are outlined on how to test light sources. Finally, recommendations are provided on the use of the definitions and quantification methods, together with directions for future work.

The publication is written in English, with a short summary in French and German. It consists of 51 pages with 16 figures and 3 tables.