

HDR IMAGING FOR ASSESSMENT OF GLARE AND OF OBTRUSIVE LIGHT

Abstract

High Dynamic Range (HDR) imaging for glare evaluation lacks standardization, while uncertainty statements are usually absent. Together, these issues make it nearly impossible to fully explore the potential and limits of these systems. This workshop will provide a brief overview of the latest advancements in HDR imaging for evaluating glare and assessing the environmental impact of obtrusive light. By exploring technical aspects and real-world applications, it will set the stage for an in-depth discussion. Participants will be encouraged to engage in an open exchange on the challenges faced, lessons learned, and key research needs, fostering a collaborative dialogue that drives future advancements in the field.

Convenor

WIENOLD, Jan, EPFL (*confirmed*); BOUROUSSIS, Constantinos, METAS (*confirmed*); LEDIG, Johannes, Physikalisch-Technische Bundesanstalt (*confirmed*)

This workshop is organized by CIE Division 2.

Speakers

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(Additional speakers to be confirmed)

Workshop description

High Dynamic Range (HDR) imaging was introduced around two decades ago to glare research, which enabled researchers and practitioners to evaluate a wide range of lighting scenes. For the assessment of scenes where high contrast levels exist simultaneously in the same field of view, imaging luminance measurement devices (ILMD) and red-green-blue (RGB)-based cameras are typically used. The quantification of such high dynamic range in luminance levels is achieved by capturing and post-processing image sequences to generate HDR ones. However, standardization and uncertainty statements are usually absent, which makes it nearly impossible to fully explore the potential and limits of these systems.

This workshop will give a brief overview of the state of the art of HDR imaging for glare evaluation as and outcome of technical committees TC 2-86 “Glare Measurement by Imaging Luminance Measurement Device (ILMD)” and TC 2-95 “Measurement of Obtrusive Light and Sky Glow” and the European metrology project EPM 21NRM01 [HiDyn](#). The discussion within this workshop targets challenges and future improvements of HDR imaging measurements to enable proper assessments of various lighting scenarios that include discomfort glare from daylight and electric light, safety from lighting installations and the environmental impact of obtrusive light. The workshop will be organized in two parts, covering the following topics:

1. Overview and examples (45 min)

- Brief introduction to the state of the art in HDR imaging for glare assessment and overview about ongoing work in related technical committees of CIE. Overview of different glare applications and their needs and state of the art image evaluation, glare source detection algorithms and metric calculation.
- Overview of the European metrology project HiDyn.
- Characterization of imaging devices using reference light sources.
- Overview of LDR image merging algorithms

- HDR imaging for glare assessment in practice, including examples from Vienna, Bern, and Berlin
- Current challenges for reliable HDR imaging for glare assessment

2. Discussion (45 min)

- Open discussion on challenges and lessons learned, to identify research needs regarding reliable HDR imaging and glare assessment. What are the limitations of the hardware and the affordability of key-turn ready devices? Are there disruptive measurement devices or evaluation approaches upcoming? What is the minimum effort and expertise, what to expect from operators performing glare assessment?
- Outlook to follow-up research (identifying organizations/institutions, funding sources, upcoming research projects) and prioritize where to go: moving observers (e.g. tunnel lighting) and moving glare sources, wearable HDR imaging devices, and so on.