Workshop

MEASURING TEMPORAL LIGHT MODULATION AND ASSESSING ITS EFFECTS ON VIEWERS: MOVING TOWARDS SETTING LIMITS

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Cyclic variations in luminous output of a lighting system, whether they arise because of the light source (e.g., a fluorescent lamp on a magnetic ballast) or the addition of controls to the lighting system (e.g., pulse-width modulation to dim a light-emitting diode lamp) are known as temporal light modulation [TLM]. The fact that solid-state lighting systems can be designed in many different ways means that there are no longer generalizations to be made about the TLM properties of light sources, as was the case with previous technologies. This has brought forward the need for measurement protocols that will permit consistent assessments of the TLM properties of lamps and lighting systems. The variety of TLM conditions that people may encounter has also raised the importance of research that will relate TLM conditions to visual perception, cognition, and neurophysiological effects. It has long been known that 100-120 Hz TLM can adversely affect visual performance, and lead to headache and eyestrain, but only recently has there been the ability and the need to study the effects of TLM at other frequencies, with various waveforms, duty cycles, and across a range of modulation depths. CIE has active projects in TLM metrology (TC 2-89) and on the visual effects (TC 1-83). Related original research presented at the CIE 2019 Session will add to the foundational material for this discussion.

This 60-min workshop builds upon both the February 2017 CIE Stakeholder Workshop (CIE TN 008:2017) and on a workshop held at the Mid-Term meeting in Jeju. This workshop will take the form of a panel discussion followed by a facilitated discussion with the audience. Panellists will include leaders from CIE TC 1-83 and TC 2-89 and members of CIE Research Forum RF-02.

The focus will be twofold:

- Metrology: What are the high-priority matters to address?
- Effects on Viewers: What are the effects? Who are the most sensitive people? What effects are the most important to understand?

The outcome will be improved guidance to existing and possible future CIE technical committees addressing this topic, and inspiration to researchers working in this field.