



TFGP-01-02

ADAC Symposium on Glare in Road Traffic March 2025

Short summary report

242

CLUBS

147

COUNTRIES

80M+

MEMBERS

NORTH & CENTRAL AMERICA

29 Clubs
20 Countries

EUROPE

103 Clubs
50 Countries

MENA

32 Clubs
21 Countries



SOUTH AMERICA

14 Clubs
11 Countries

AFRICA

27 Clubs
21 Countries

ASIA PACIFIC

37 Clubs
24 Countries



**ONE OF THE WORLD'S
LARGEST NOT-FOR-
PROFIT CONSUMER
ORGANISATIONS**



**FIA IS IN A UNIQUE
POSITION TO
FACILITATE
COMMUNICATION
AND EXCHANGE OF
IDEAS AMONG THE
80M+ ROAD USERS IT
REPRESENTS**

ADAC organised a Symposium on Glare in Road Traffic 25th+26th of March 2025

In December 2024, the German mobility club ADAC invited scientists, engineers, technicians and automotive lighting experts to discuss the factors of glare in road traffic through lectures and discussions.

The aim was not necessarily to present the latest research results, but rather to communicate known results in a way that is easy to understand and to overcome the 'language barriers' between scientists, technicians and decision-makers.

The event was aimed at interested parties from industry and business, science, politics and the media. As the topic was of international relevance and speakers and participants from abroad were also to be recruited, English was chosen as the language of communication.

The symposium took place at the ADAC Mobility Test Centre in Penzing/Bavaria.

Program

The presentations were interspersed with discussion rounds. The aim was to understand glare from a variety of perspectives in order to find solutions.

The symposium was divided into the following topics:

- Survey results and accident data
- How vision works and the biological and medical processes involved in glare
- Physical and technical causes of glare
- Measures to reduce glare

The following speakers, among others, have been contributing:

Henrik Liers, Vufo at TU Dresden; Prof. Dr. Ulrich Schiefer, HS Aalen; Tom van den Berg, NIN/KNAW Amsterdam; Dr.-Ing. Klaus Trampert, KIT; Christian Schwanengel, TechnoTeam; Prof. Dr. Stephan Völker, TU Berlin; Dr. Ernst-Olaf Rosenhahn, Marelli; Prof. Dr.-Ing. Benedikt Lamontain, HS Magdeburg; Prof. Dr. Tran Quoc Khanh, TU Darmstadt; Dr. Michael Hamm, TU Darmstadt; Dr. Rainer Neumann, GTB; ...

Program

In particular, the evening demonstration of various headlight technologies and test drives with ADB systems, which, for example, react poorly in turning situations, allowed participants to see for themselves where there is room for improvement in reducing glare in road traffic.



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First findings

It is very difficult to summarise seven hours of lectures and two hours of moderated discussion in a few sentences.

- Psychological glare is based on personal perception and the condition of the eyes (visual acuity, illnesses, aging). Physiological glare can occur in addition to psychological glare. Both endanger safety and lead to stress for the driver.
- Ophthalmologists see a difference between the perception of the blinded person and the influence on the retina and visual function (Resolution for imaging process vs. density of photoreceptor cells on the retina).
- From greater distances ($\geq 50\text{m}$), luminance plays a less important role (but still does) than illuminance and color spectrum. A systematic study on this has not yet been identified.
- Incorrectly adjusted headlights contribute significantly to glare. Even when new vehicles are delivered, there are significant deviations.
- Dirty headlights cause significant glare, especially with modern LED headlights.
- Approximately one in every ninety encounters with a vehicle in the dark is associated with a very strong glare event.
- The topography is a significant factor in causing glare in up to five per cent of the route.

First conclusions

Possible measures were discussed at the symposium and are recommended by FIA:

- Adjusting the amount of light (and the beam angle) according to ambient brightness and driving speed reduces glare in urban areas.
- The headlight adjustment process (aiming) needs to be significantly improved – both for newly delivered vehicles and for the main inspection/PTI.
- Minimum light source size should be connected with minimum homogeneity requirement.
- Illuminance should be limited for low beam in 50V, 50R and 75R, but also between the measuring points (maximum acceptable glare).
- Adaptive light systems could help on reflected glare and maybe on glare by topography.



Unnecessarily high luminance
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FIA recommendations

Measures, that require further development in the view of FIA:

- Luminance has to be regulated and limited for all kind of light sources.
- Adaptive high beam systems have to be optimized to protect all road users, including cyclists and pedestrians.
- Effektive headlight cleaning systems should be mandatory for LED-beamers (like for HID).
- Smooth transitions between light und dark areas should be provided to reduce strain on the human eyes.



Availability of the presentations

ADAC is collecting the presentation slides and will be able to offer the files with the begin of week 16/2025 on demand for personal use and information, only.

Please contact Burkhard Böttcher:

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Unnecessarily high luminance
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**Good vision with low
glare – for a high level
of safety on the road**

