The International Automotive Lighting and Light Signalling Expert Group

# Current and Planned Research Projects Sponsored by the GTB Scientific Working Group (SVP)

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# AGENDA

**Introduction**

**Road Projections**

**AV communication with other road users**

**Super Small Headlamps (risk of discomfort glare)**

**Photobiological risk with “bluish” LEDs**

**Potential of reducing electrical power and CO2 in Automotive Lighting with intelligent solutions in specific traffic conditions**

# Introduction

GTB WG SVP (Safety and Visual Performance) is taking the tasks from WG Strategy to execute research studies with neutral , objective institutes and universities on important topics. The target is to use the findings to convince the legislation authorities in GRE to accept the release of new lighting systems and functions with an approval.

Discussion in GRE has shown that some key elements have to be identified by means of research studies:

The new system or function has to demonstrate :

- safety improvement
- advantage / comfort for the driver
- no distraction of other road users

# Road Projections: Example snow flake

# Investigation of potential distraction with eye tracking system

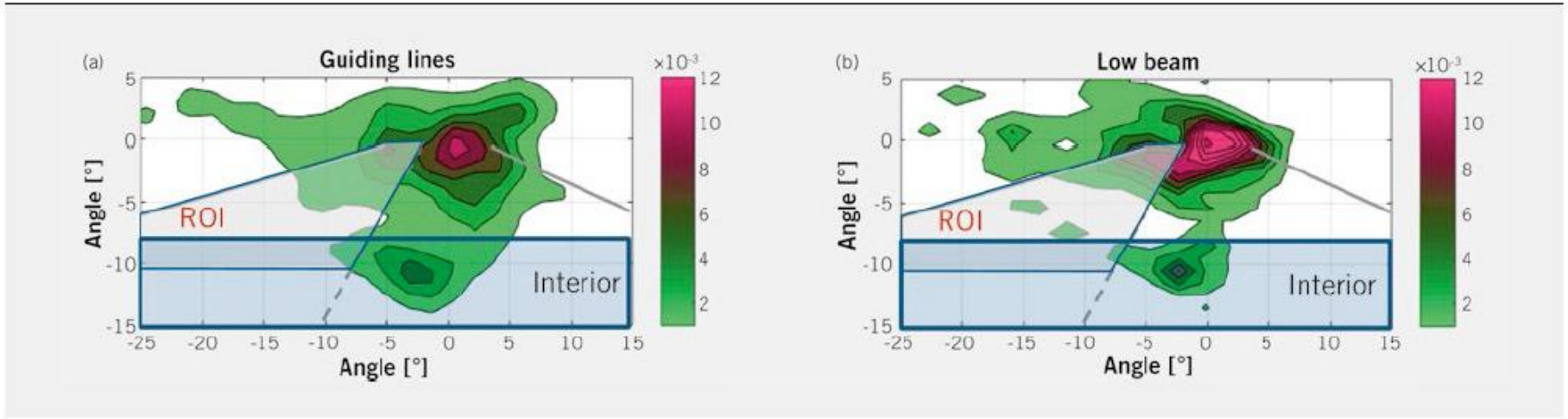


**FIGURE 1** Gaze attention densities of the drivers: subjects of neutral vehicles (without front projection = low beam) during overtaking of the test vehicle (a) with respectively (b) without guiding lines (© Technische Universität Darmstadt)

**Plan**: **more symbols and pattern to come !**

# AV Communication to other Road Users

**Methodology**
**Deparking scenario**

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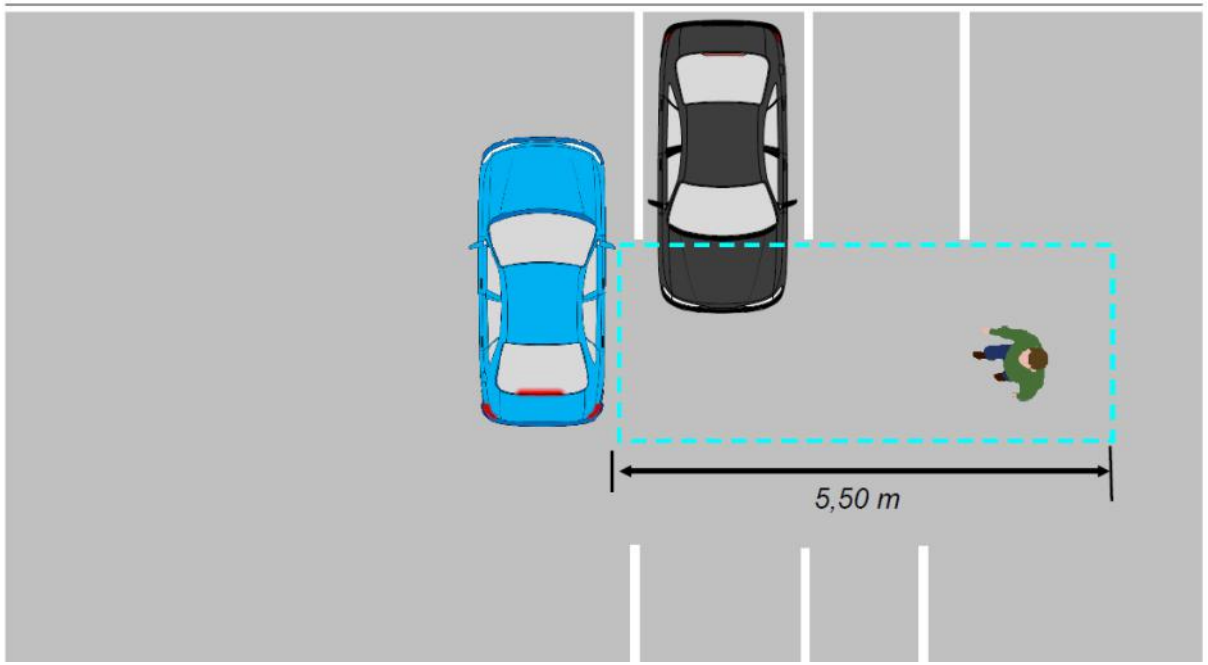



VR : Succesfully practiced

**Plan**: **Finalize TU Darmstadt Study by taking into account more complex traffic scenarios**

# General Styling Trend: Super Small Lamps







Ref. : DVN Study 2020

# General Styling Trend: Super Small Lamps

Status:

Various publications are afraid of small sizes of headlamps and rear lamps regards to discomfort glare for the traffic participants

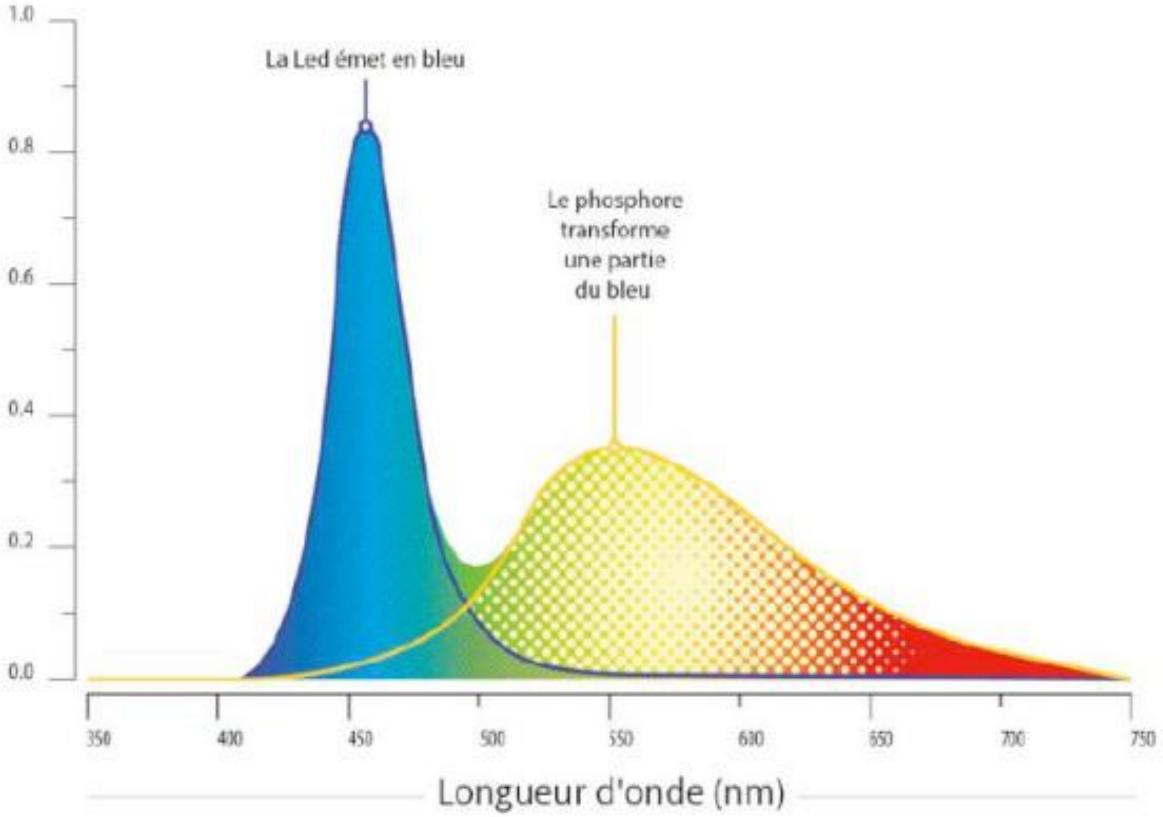
Plan:

Execute a research study with real, dynamic tests with super small headlamps and evaluate the discomfort glare (de Boer rating) compared to standard sized lamps

GTB asked for a Literature Study globally:

Result: principally no direct connection between size of lamps versus degree of discomfort glare

# Potential Photobiological risk with blue lights




Significant Bluish content of Automotive LED's

**Result**: Risk group 2 (moderate risk)

**Recommendation** : Reduce luminance !

Ref.: Press Kit 2019 ANSES

# Potential Photobiological risk with blue lights

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**Discussion**:

- Reply with a proposal of a new standard (CIE) covering the Automotive lamps
- Reply with a research study at a professional institute taking into account the real conditions (e.g.: exposure time and distance) when applying LEDs in Automotive headlamps

# Potential of reducing electrical power and CO2 in Automotive Lighting with intelligent solutions in specific traffic conditions

Consider environmental aspect: External street lighting, weather condition
Consider traffic situations : city light, motorway light, country light
Consider traffic jam (Stop & Go traffic)

React by means of: dimming of given light pattern
change light pattern function (see AFS)
(position light, DRL instead of Low Beam)
automatic avoidance of misuse of rear fog function, high beam

**Keep safety level !!**

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# LIGHT IS ALWAYS NEEDED IN THE FUTURE!

**Thank You very much !**