Informal document GRE-81-23
(81st GRE, 15-18 April 2019, agenda item 10)

Transmitted by the experts from The International Automotive Lighting and Light Signalling Expert Group (GTB)

GTB activity report for the 81st GRE session
Main working areas

- **Stage 2 Simplification:**
  - Support SLR and harmonisation with Chinese simplification of GB Standards.

- **AV Signalling:**
  - Support the GRE TF on Autonomous Vehicle Signalling Requirements (AVSR)
  - Consideration of the next steps in signalling and communication

- **New Lighting functions:**
  - Development of provisions for light projections on the road
  - Research Studies on New Functionalities in Automotive Lighting

- **LEDs retrofit:**
  - Support the GRE TF on Substitutes/Retrofits (TF S/R)
  - Consideration to have general requirements for new innovative Light Sources

- **Various:**
  - Consideration of sensors related to lighting and visibility functions (e.g. camera, LIDAR, radar, etc.), their integration in Headlamp/Rear Lamps and cleaning
  - Support SAE for NHTSA ADB NPRM requirements
Focus on Research Studies on New Functionalities in Automotive Lighting

New Functionalities:
- Parking / Deparking indication
- Driving through Construction Zones
- Projection of symbols as information for driver
- Identifier for vehicles running in autonomous mode
- Cultural aspects in understanding of symbols used in Car to Pedestrian Communication
Target and Motivation to initiate and support research studies by GTB

Independent research studies by universities and institutes should investigate if a new function provides safety benefits, is a comfort feature and provides important information to the driver and to other road users.

Such studies shall also investigate whether a new function is disturbing or confusing other road users.
Deparking Rear Light | Indication of the vehicle’s movement direction
Light-based driver assistance
Construction zone lighting

- Projects a trajectory prediction of the car width on the basis of sensor data
- Purpose: assistance
- Target: driver
- Position: passing beam area (8-35 m)
- Addition to passing beam
Guidelines in Construction Zone Areas
New Functionalities: Snow Flake Projection

**CASE:** VEHICLE WITH HIGH RESOLUTION HEADLIGHTS PROJECTS A SYMBOL WHILE OVERTAKING OTHER VEHICLES
**HR (High Resolution) vehicle projecting a snowflake**

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<th>HR VEHICLE</th>
<th>TP (Test Person) Vehicle</th>
<th>H (Hare) Vehicle</th>
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<td><strong>OVERTAKING @ 100 KM/H</strong></td>
<td><strong>SUBJECT DRIVING</strong></td>
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<td><strong>RANDOM ORDER</strong></td>
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<tr>
<td>• SNOWFLAKE</td>
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The International Automotive Lighting and Light Signalling Expert Group

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How to identify and inform the other traffic participants on the autonomous driving mode?

- The technology of autonomous driving cars is rapidly developing.
- The first cars will soon be on the road.
- A visual communication using light signalling between the vehicle in autonomous mode and the other road users has to be defined.

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Cultural Aspects in Communication Car to Pedestrian using Symbols

Research Tests in Europe, Japan, China, South Korea, USA
Timing and Outlook

• Research Studies will be completed in July 2019
• Results will be published
• Further studies are in preparation