

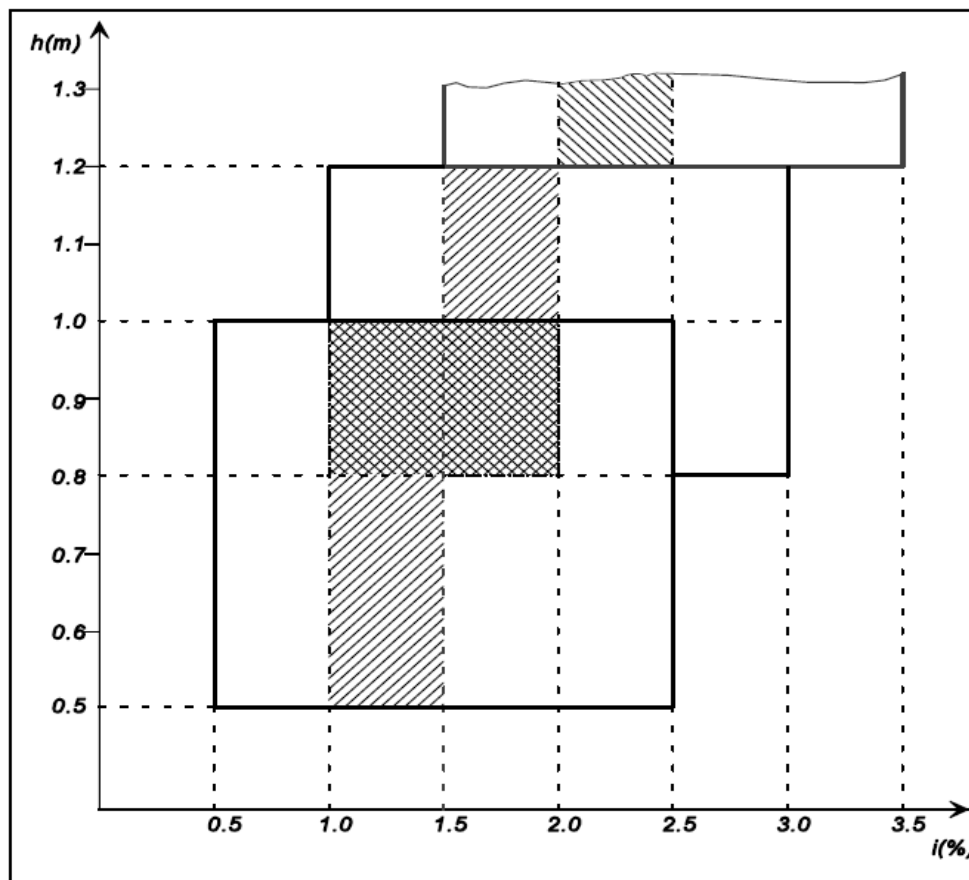
Informal document **GRE-85-29**
(85th GRE, 26–29 October 2021,
agenda item 4 (e))

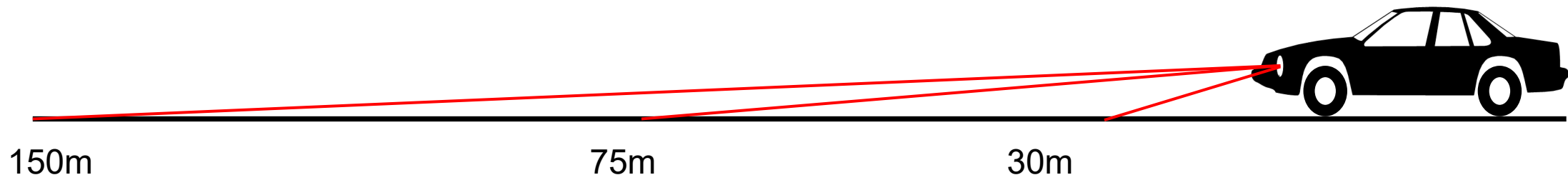
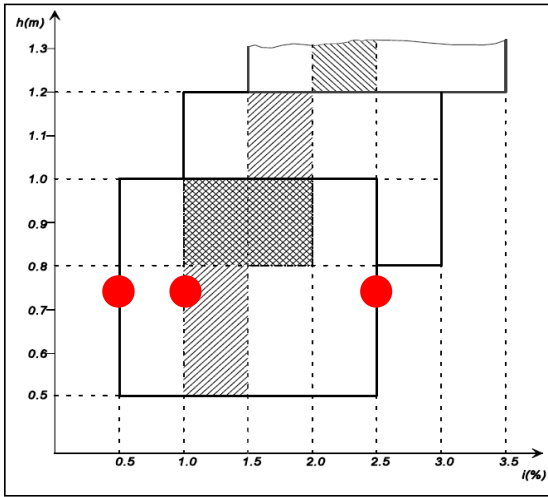
Submitted by the expert
from Poland

JUSTIFICATION for GRE-85-19

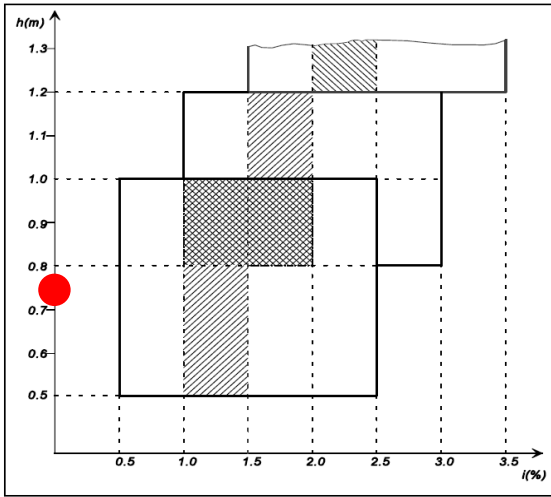
Reg. 48

Existing
situation

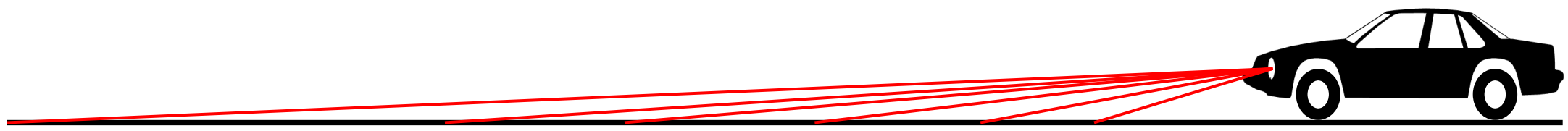


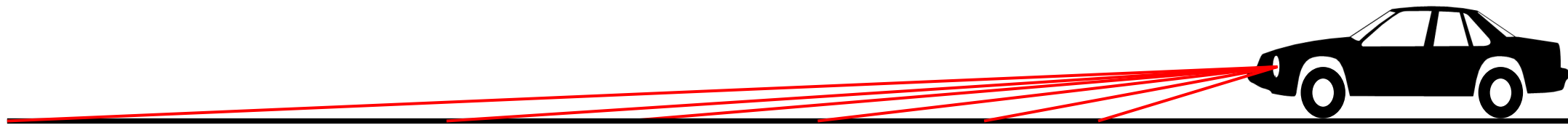


At the moment, there are very wide load/ levelling tolerances

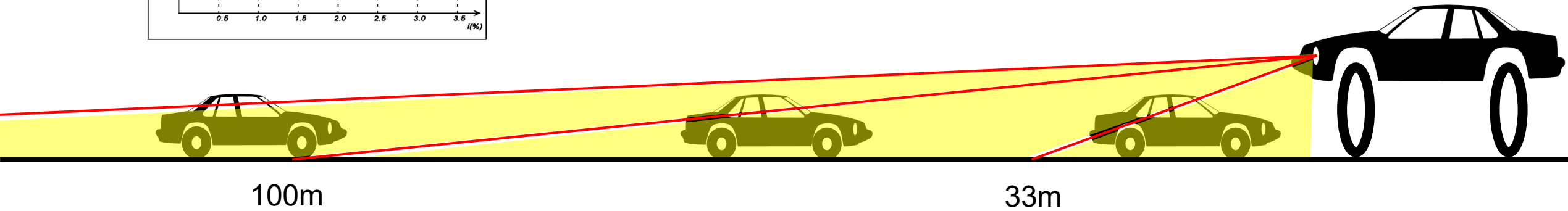
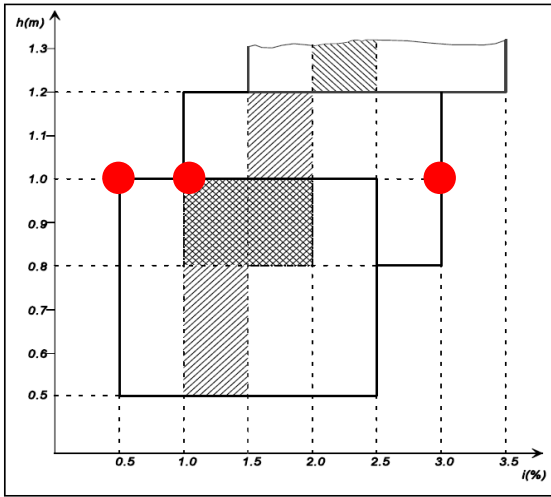


Necessity to use MANUAL LEVELING DEVICE

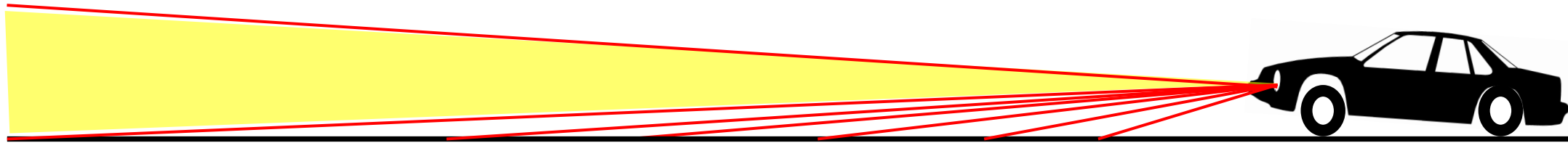




GLARE FOR IDEAL SITUATION
height of headlamp below 0.95 cm



GLARE FOR higher mounted headlamps
 height of headlamp over 1.0 m



GLARE FOR REAL SITUATION – improper use of manual levelling device

INITIAL AIM ISSUE ANYWHERE INSIDE BOX

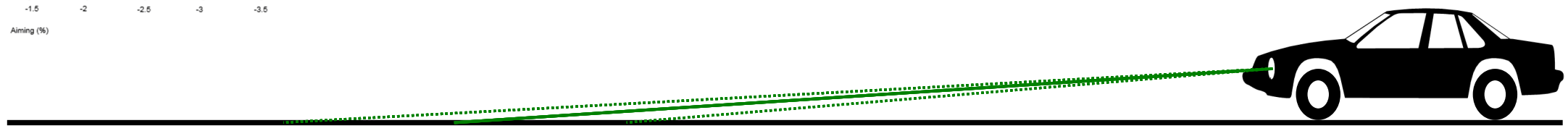
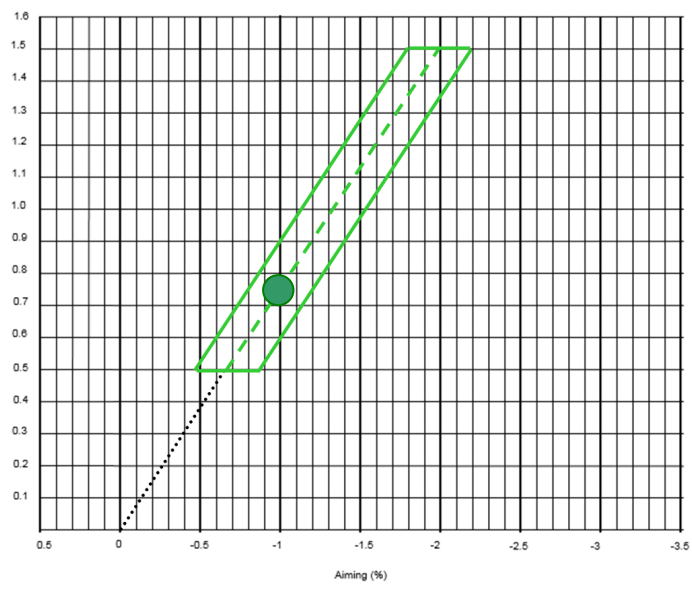
Poland proposed initial aim anywhere inside box **for IWG-VGL**
because of OICA request for prolonged use of manual levelling device

For today – automatic levelling only

Justification no longer valid - **Poland withdraws proposal for initial aim
anywhere inside box**

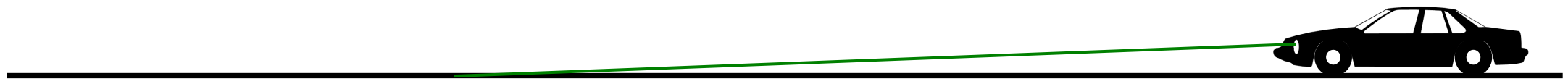
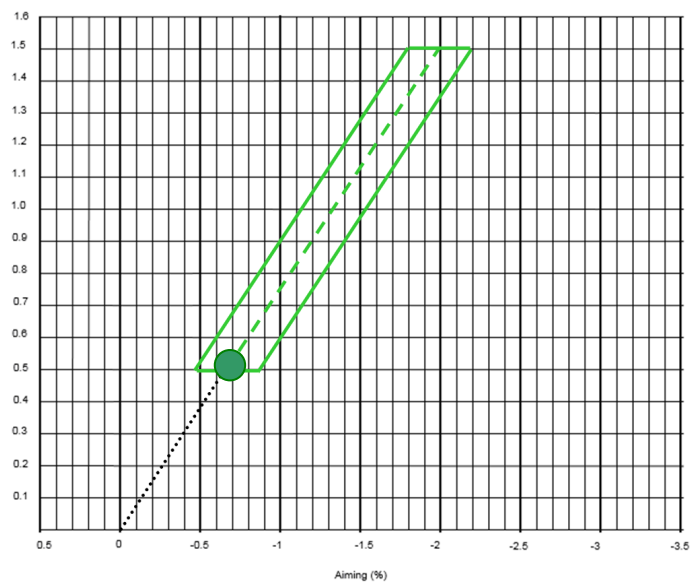
Initial aim should be **performance based** – the same road illumination for
each mounting height

Headlamp mounting height (m)



PROPOSAL – standard height

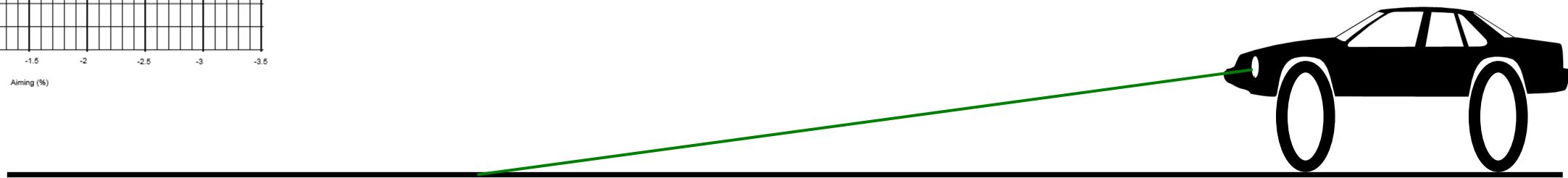
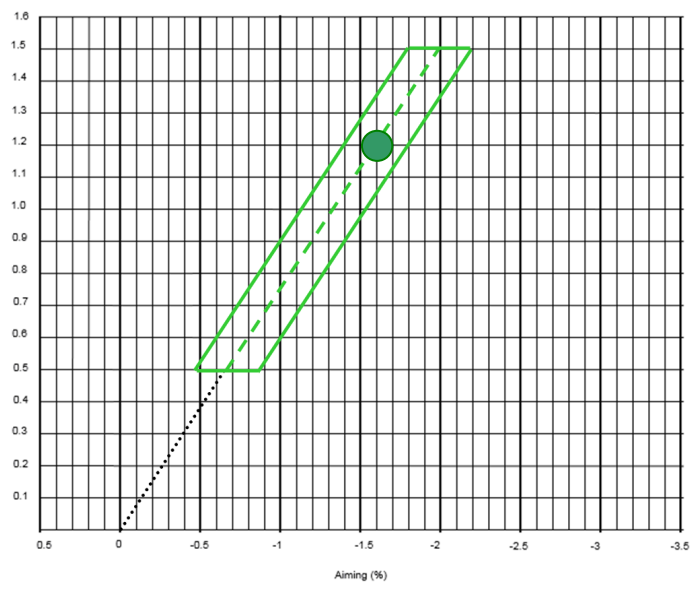
Headlamp mounting height (m)



75m

PROPOSAL - low mounted headlamp

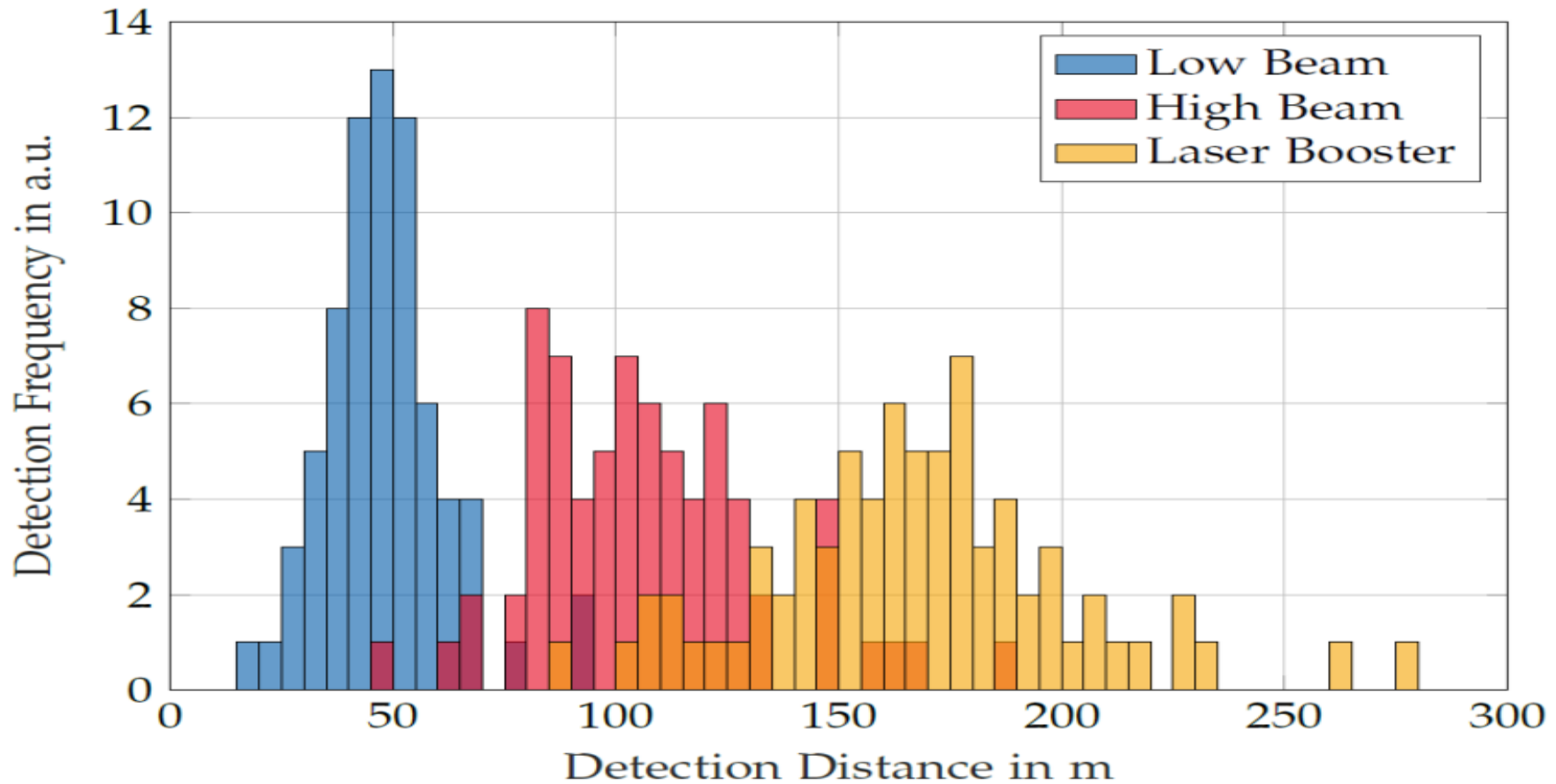
Headlamp mounting height (m)



75m

PROPOSAL - high mounted headlamp

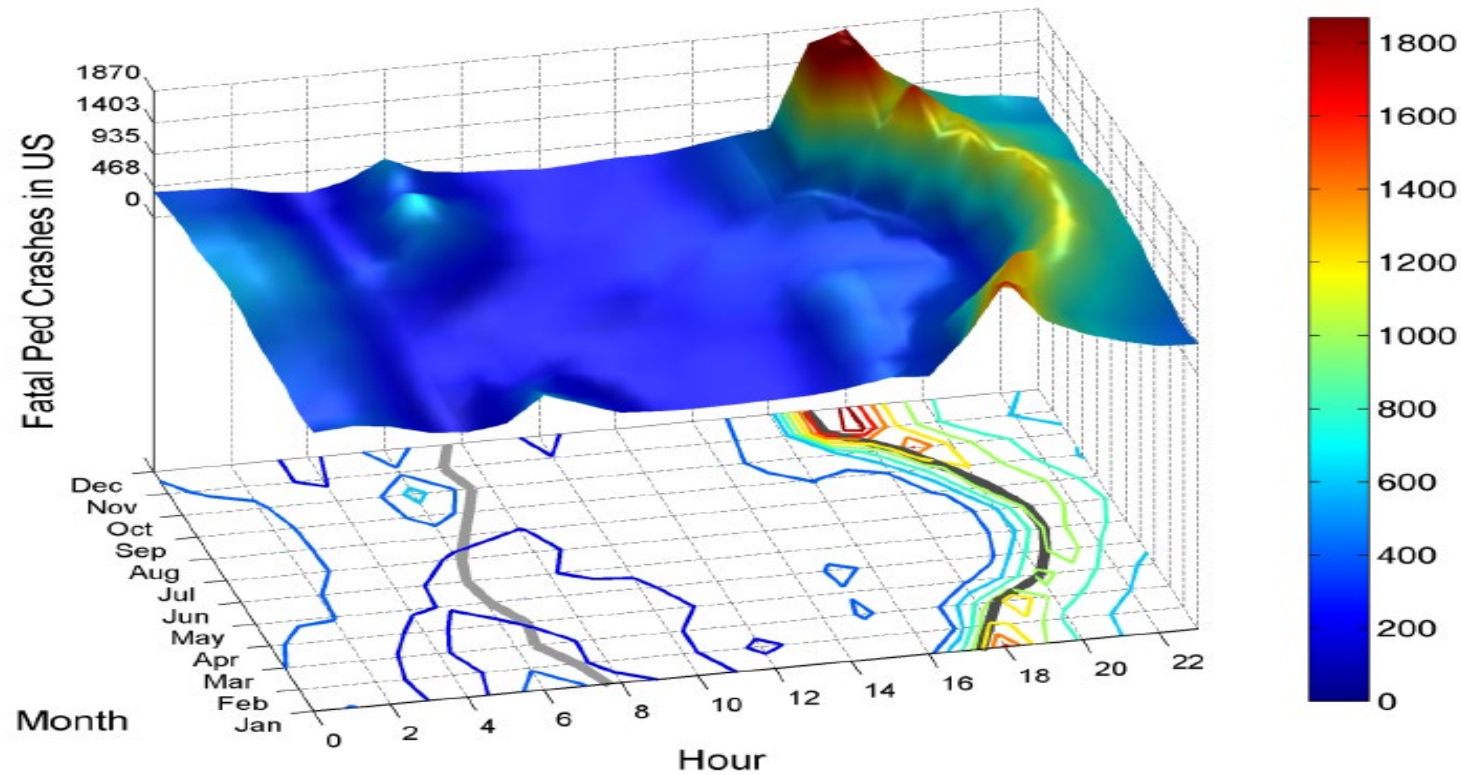
Detection distance for different kind of headlamps (20m – 100 m)



J. Kobbert, K. Kosmas, T. Khanh

PEDESTRIAN FATALITIES IN RELATION TO MONTH AND DAY HOUR

Pedestrian deaths FARS, 1987-2003



GTB

Glare and
Visibility
Forum,
Geneva,
22 October
2018

DARKNESS HAS VERY DIFFERENT EFFECTS BY CRASH TYPE

For fatal crashes, darkness increases risk by factors of:

| | |
|---------------------|-------------|
| - Two-vehicle | 1.33 |
| - Road departure | 0.99 |
| - Pedestrian | 4.14 |
| - Animal | 4.60 |

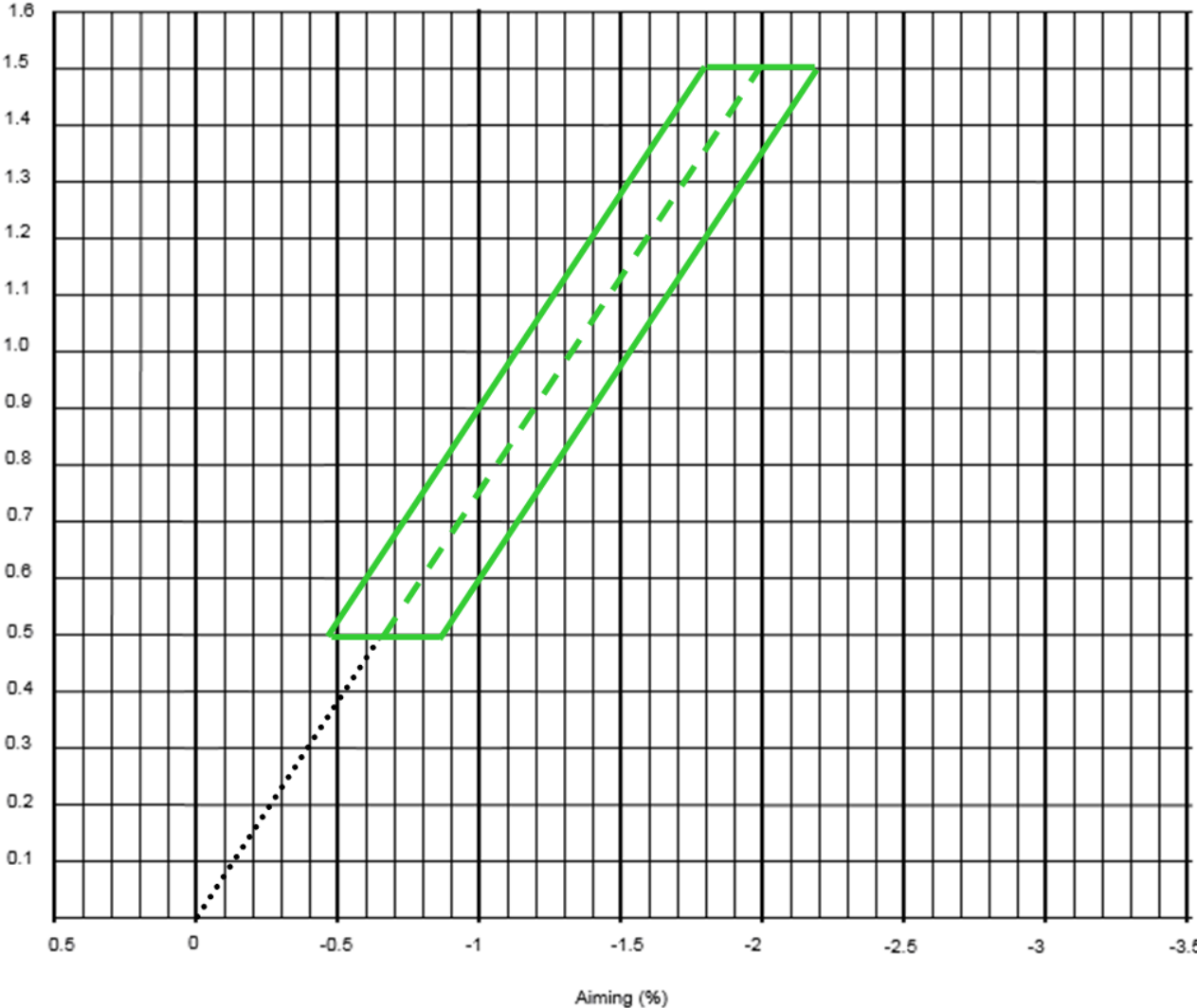
M. J. Flannagan
UMTRI

Poland

**FOR FATAL PEDESTRIAN CRASHES,
DARKNESS INCREASES RISK BY FACTORS OF 12**

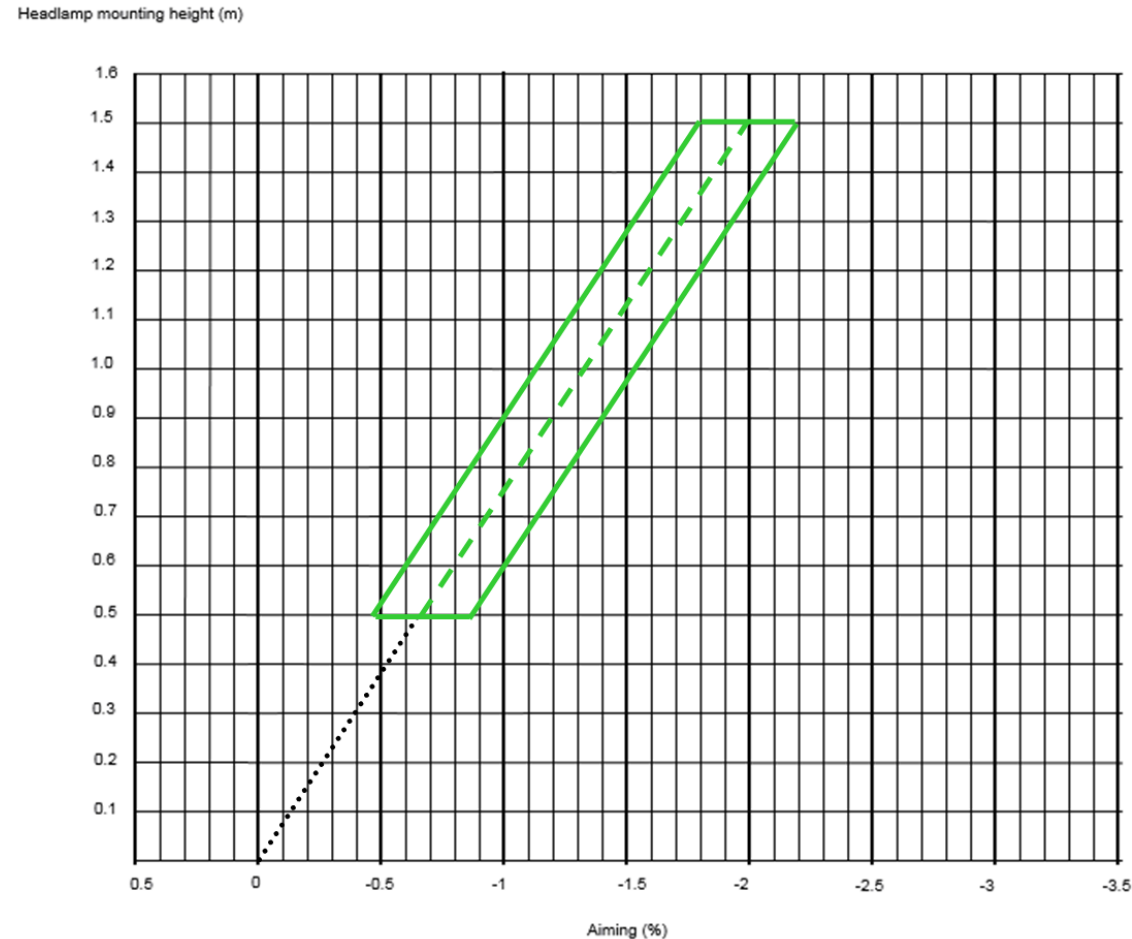
Proposal

Headlamp mounting height (m)



Proposal

Current technology of (static) automatic levelling devices is compatible with repeatability for any load distribution on the car better than possible to measure (better than $\pm 0.1\%$).
As general rule it is proposed to restrict “box” to $\pm 0.2\%$ from initial aim value as the best choice.



Proposal

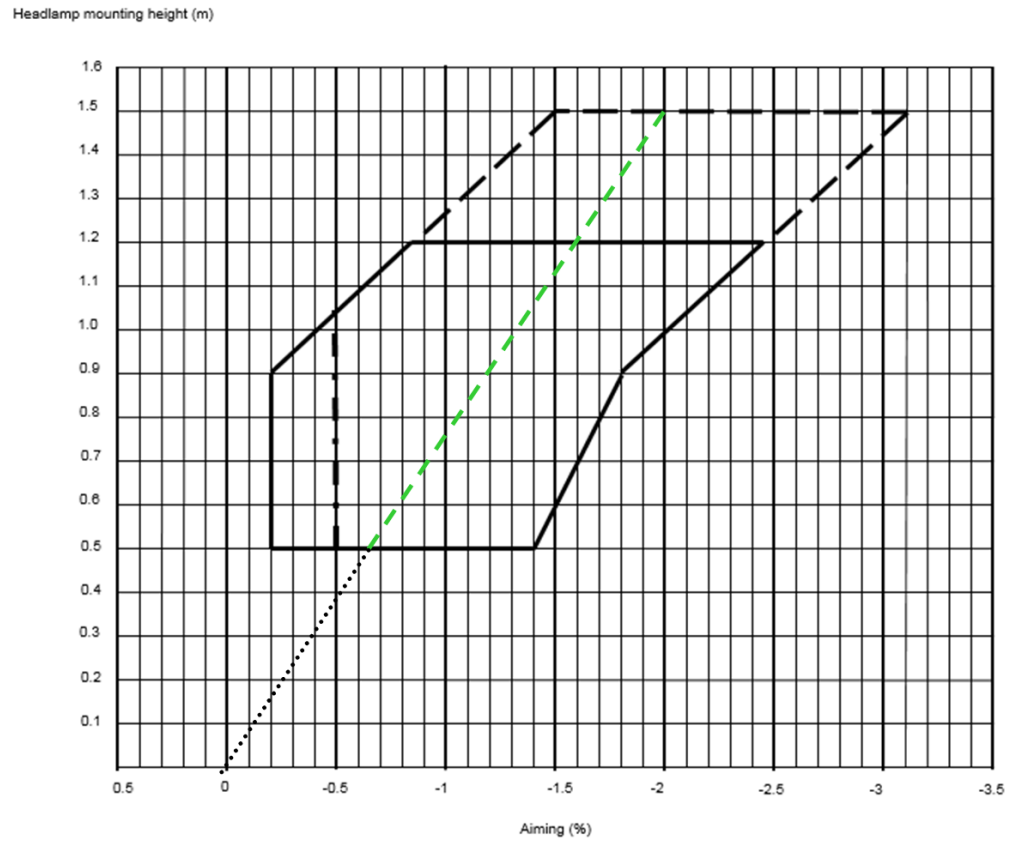
Above requirements are optimal from safety and „technology neutral” point of view

However while it is impossible to meet above requirements because of design constraints of vehicle which are impossible to avoid

it is proposed to allow

values of levelling tolerances (”box shape”) as offered in GRE/2020/8/Rev.2

ALTERNATIVE POSSIBILITY AS IN GRE/2020/8/Rev.2



FINALLY

**Proposed solution IS OPTIMUM because allow TO AVIOD
AN UNSATISFACTORY COMPROMISE:**

- **REQUIRE OPTIMAL BALANCE BETWEEN ROAD ILLUMINATION AND GLARE**
- **ALLOWS EXCEPTIONS BUT ONLY WHEN REALLY NECESSARY**

A similar solution was applied in many other paragraphs of Reg. No 48 (e.g. 6.5.4.3.; 6.7.4.2.1.; 6.9.4.2.; 6.10.4.2.; 6.14.4.2.; 6.15.4.2.; 6.17.4.2.; 6.17.4.3.; 6.18.4.2.; 6.18.4.3.; 6.19.7.3.; 6.21.1.2.3.; 6.21.7.1.; 6.21.1.2.3.; 6.21.7.1.)

Thank you for attention



Instytut Transportu Samochodowego
Motor Transport Institute