



WLP als Parameter zur Beurteilung der Längsebenheit von Fahrbahnoberflächen

11th International Conference Silesian Road
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Longitudinal evenness measurement – construction contract



- ▶ traditional contact measurements, primarily for construction contract purposes
- ▶ the 4-meter straightedge (telescopic) with measuring wedge
- ▶ the Planograf

Measuring systems - History of condition monitoring

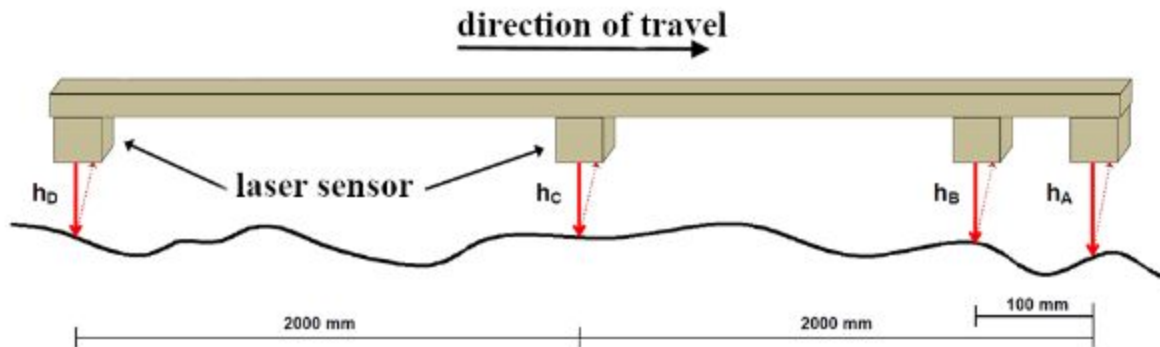


- ▶ older non-contact measurement systems, primarily for condition monitoring and assessment
- ▶ trailer for measuring longitudinal evenness
- ▶ measuring bar with multiple laser sensors for measuring transverse evenness

Measurement of longitudinal evenness



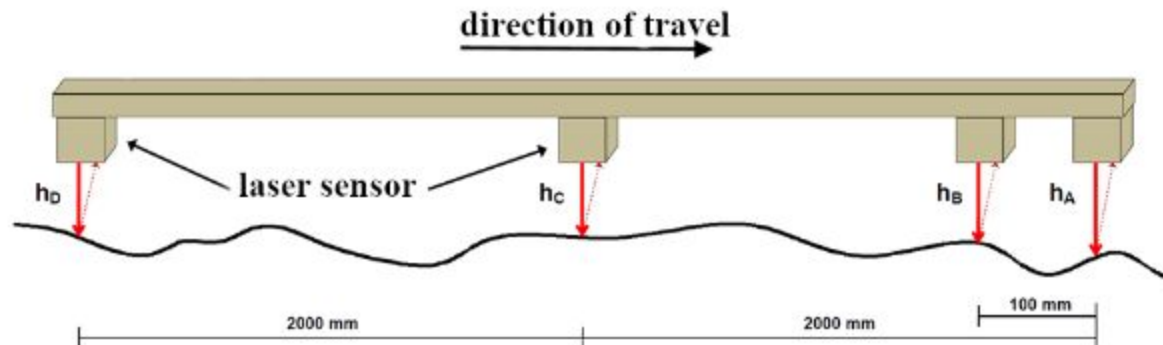
- ▶ The elevation values are measured using four laser distance sensors in accordance with the HRM principle.
- ▶ A wavelength range from 0.2 m to approximately 100 m can be covered.
- ▶ The result is a longitudinal profile with a resolution of 10 cm in the longitudinal direction.



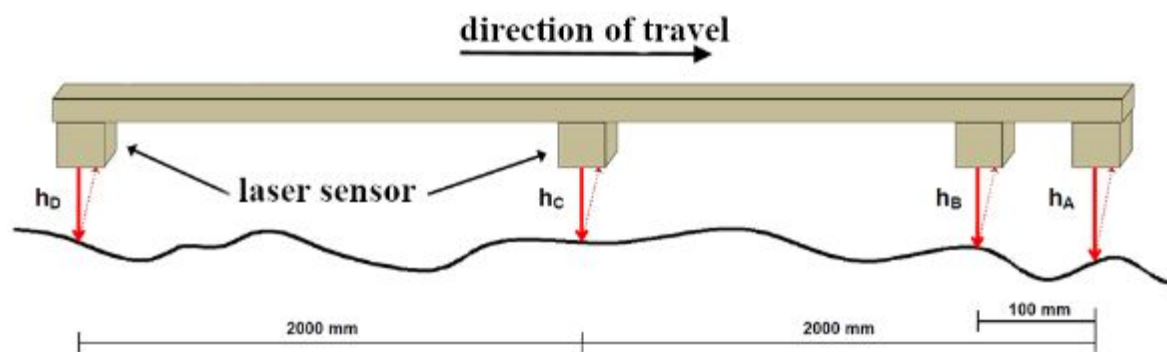
Measurement of longitudinal evenness



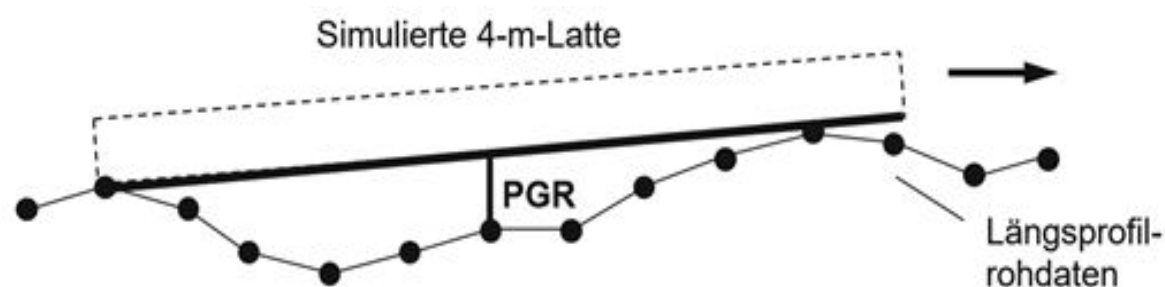
- ▶ The measurement method is independent of the measurement speed.
- ▶ Vibrations in the measurement vehicle do not affect the measurement results.



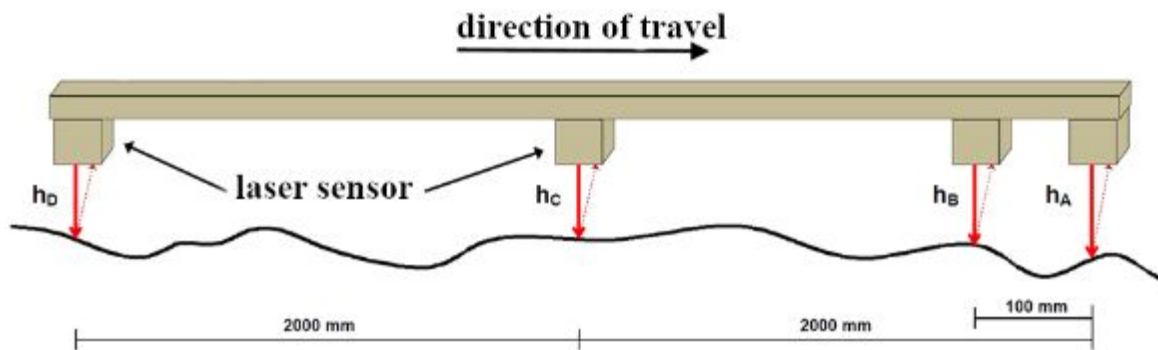
The evenness parameter PGR



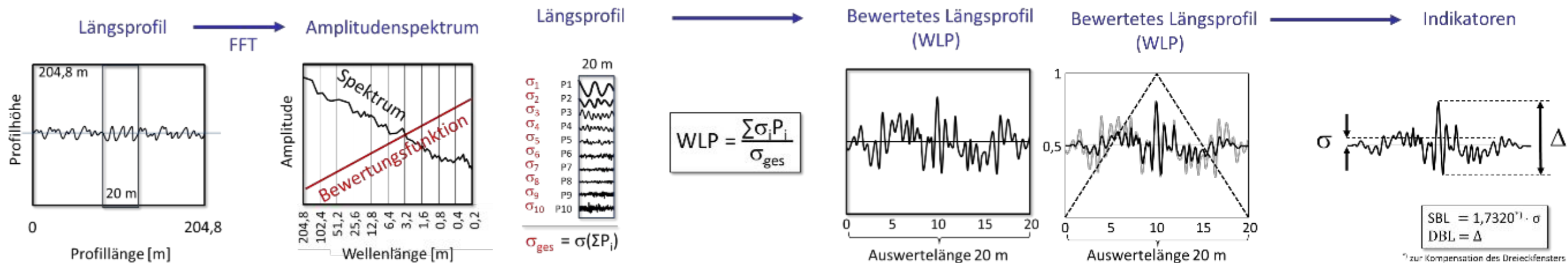
- ▶ only short-wavelength irregularities are evaluated; periodic irregularities are not considered separately
- ▶ simple geometric evaluation, equivalent to conventional contact measurements



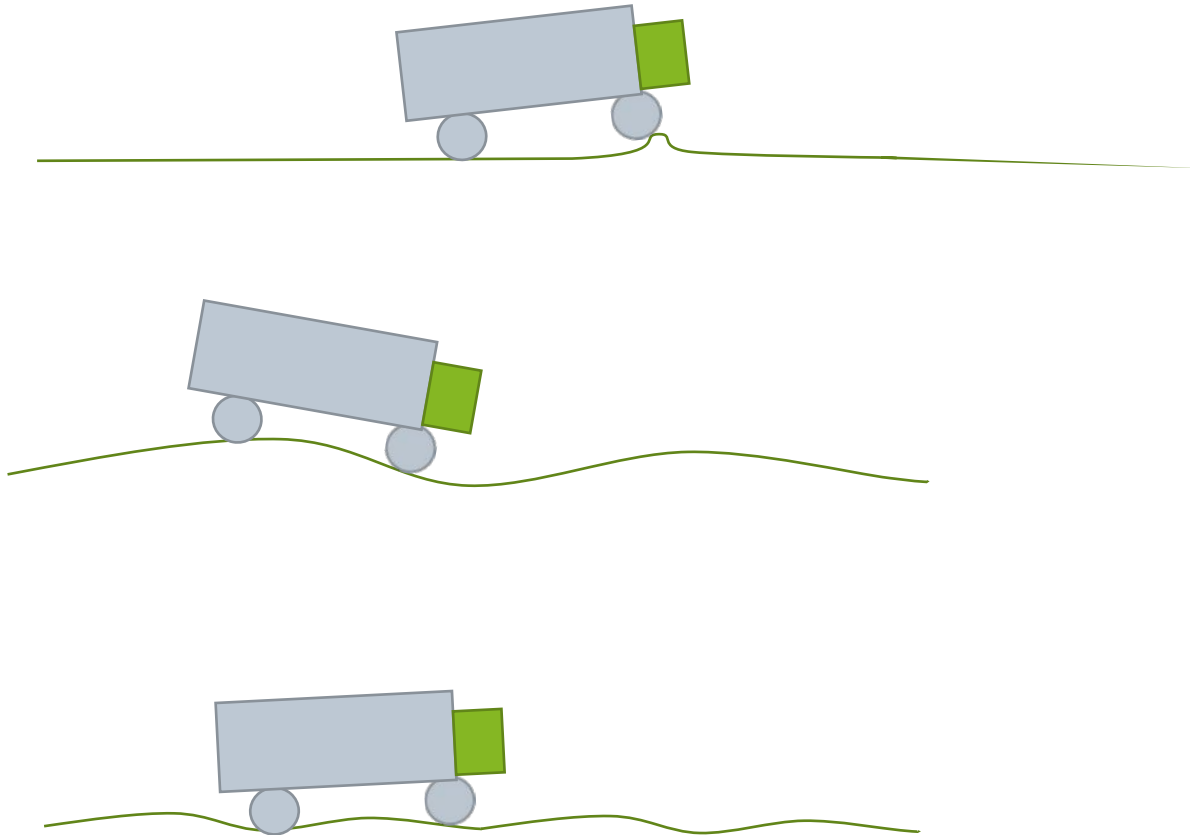
The evenness parameter WLP



- ▶ Long-wavelength and periodic irregularities can also be evaluated.
- ▶ Loss of simple geometric evaluation; complex calculations involving frequency evaluations are required

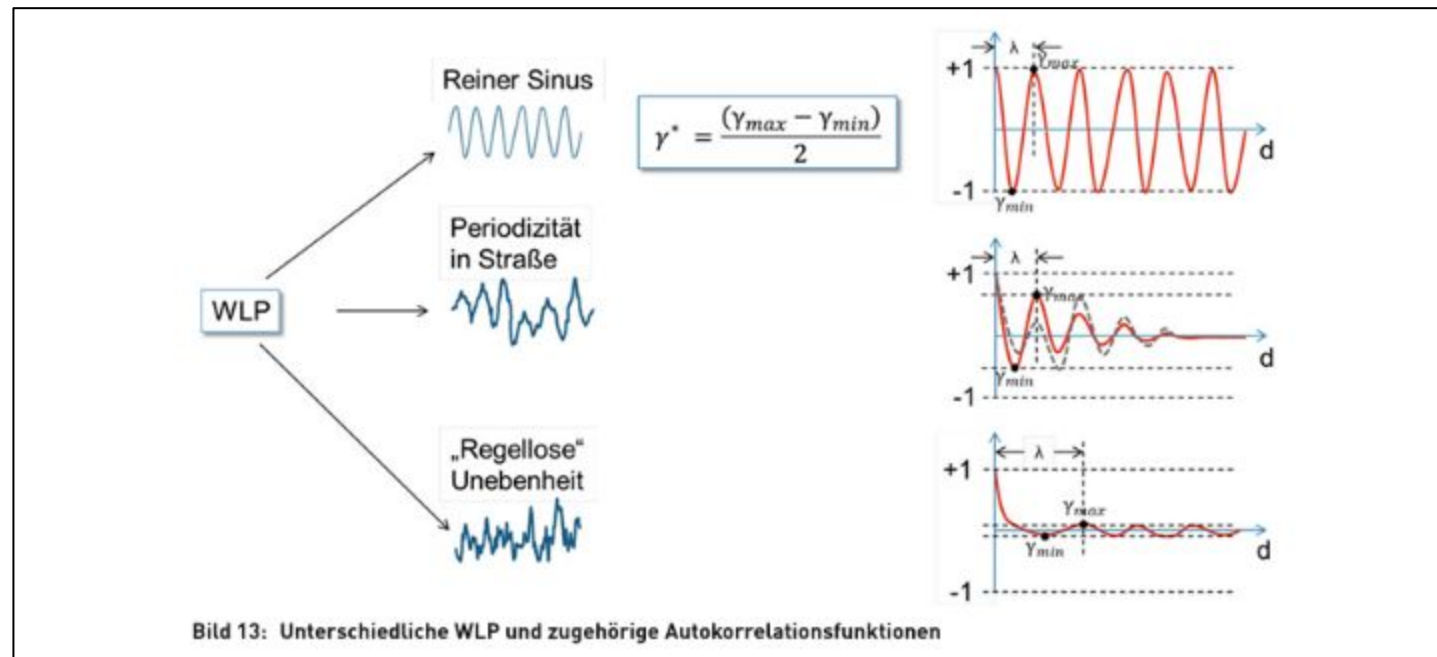


The evenness parameter WLP



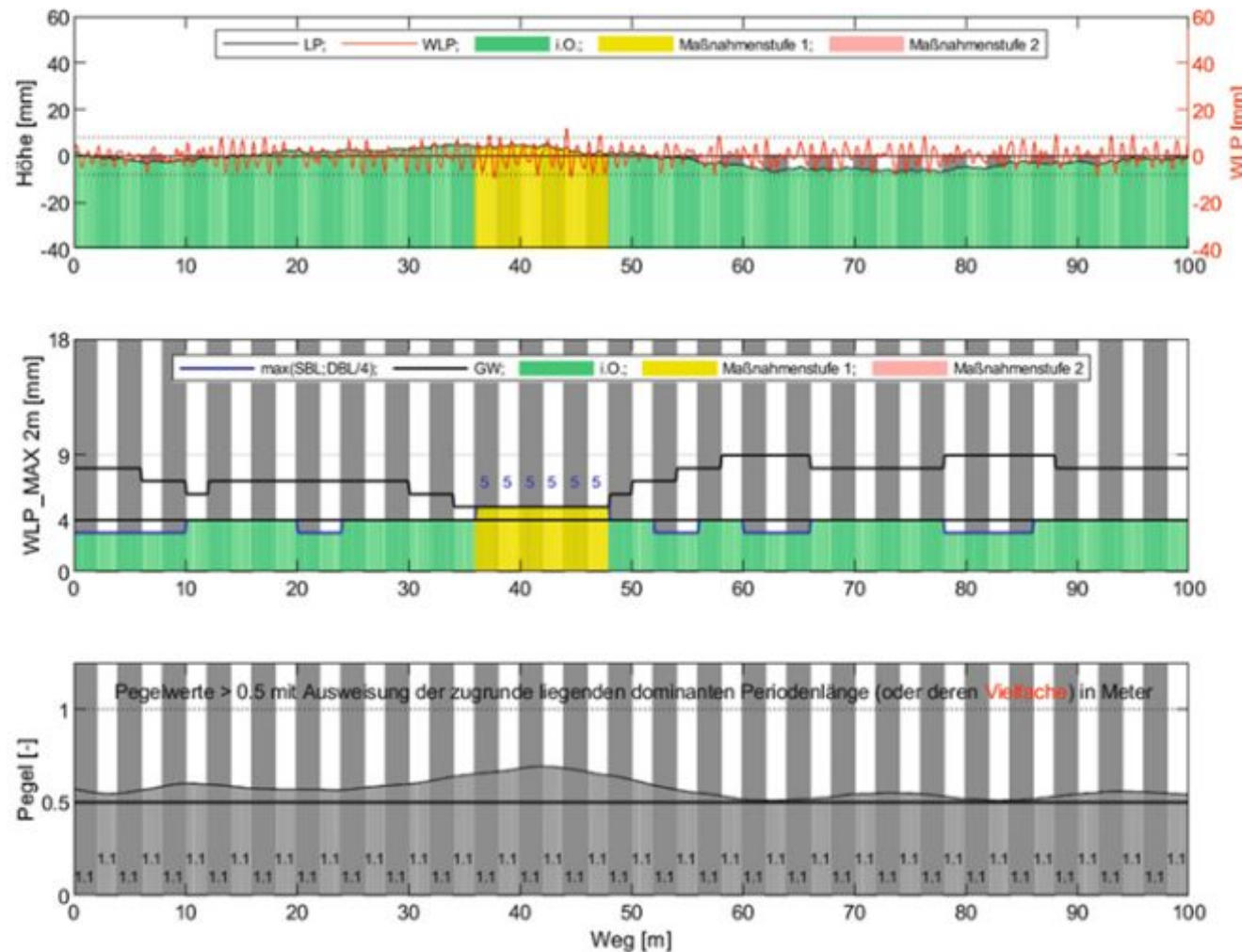
- ▶ The WLP takes into account both discrete obstacles and longer uneven sections.
- ▶ However, as the wavelength of the irregularities increases, their significance decreases.
- ▶ Periodic components are treated separately, as they often have very small amplitudes.

WLP – Influence of periodicity



- ▶ The effect of the periodicity of an irregularity is taken into account separately.
- ▶ A rare type of road irregularity that nevertheless has a significant impact on ride comfort and driving safety.

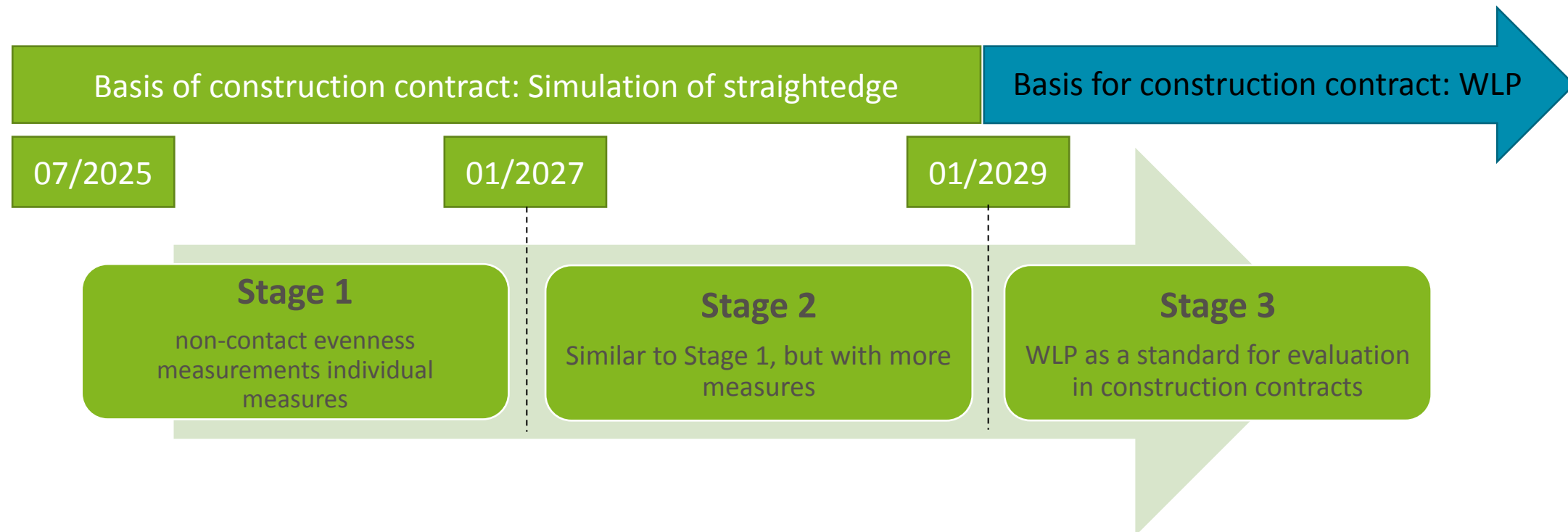
The evenness parameter WLP



- ▶ The periodicity is assessed based on the level (above 0.5 is critical).
- ▶ The assessment is based on the severity and length of the affected area.

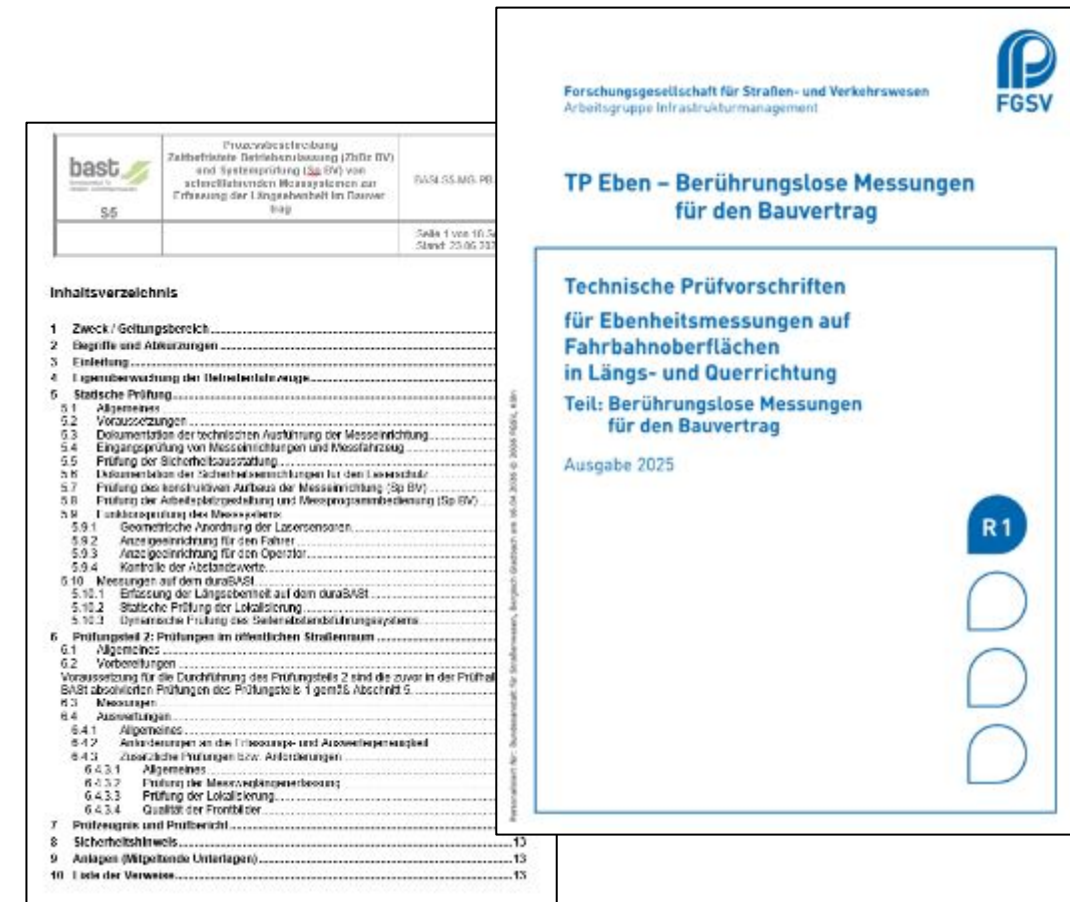
Introductory and transition phase

- ▶ Transition phase started by means of ARS 05/2025



Outline of the approval process

- ▶ inspection in the BAST facilities
- ▶ measurements on the DuraBAST
- ▶ measurements on the road network



Outline of the approval process



- ▶ duraBAST - the BAST Demonstration, Investigation and Reference Area
- ▶ Approval section and self-monitoring section for the BAST

Conclusion and outlook

- ▶ High-speed measurement can now be used as the basis for an assessment in both the condition monitoring and the construction contract.
- ▶ Under the construction contract, the transition from the PGR to the WLP takes place over a period of approximately three years.
- ▶ The introduction of the WLP into the condition monitoring is a long-term prospect, and adjustments to the evaluation process will be necessary. In addition, an evenness parameter (AUN) is already in use that covers a wider range of wavelengths.

Thank you!

**I look forward to the joint
discussion.**

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