

# Sharp regularity results for the one-dimensional curvature equation via the maximum principle

Pierpaolo Omari<sup>1</sup> and Julián López-Gómez<sup>2</sup>

<sup>1</sup> *Università degli Studi di Trieste, Trieste, Italy*

<sup>2</sup> *Universidad Complutense de Madrid, Madrid, Spain*

*Corresponding/Presenting author: omari@units.it*

## Talk Abstract

We present a novel proof of some sharp regularity results that we have recently obtained in [1, 2, 3, 4] for the bounded variation solutions of non-autonomous quasilinear equations driven by the one-dimensional curvature operator. The alternative approach adopted provides a new interpretation of the considered assumptions clarifying their meaning and making their connection with the strong maximum principle transparent.

**Keywords:** non-autonomous quasilinear equation, bounded variation solution, strong solution, strong maximum principle.

## Acknowledgements

This research has been performed under the auspices of INdAM-GNAMPA.

## References

- [1] López-Gómez, J. and Omari, P., Global components of positive bounded variation solutions of a one-dimensional indefinite quasilinear Neumann problem, *Adv. Nonlinear Stud.* **19** (2019), 437–473.
- [2] López-Gómez, J. and Omari, P., Characterizing the formation of singularities in a superlinear indefinite problem related to the mean curvature operator, *J. Differential Equations* **269** (2020), 1544–1570.
- [3] López-Gómez, J. and Omari, P., Singular versus regular solutions in a quasilinear indefinite problem with an asymptotically linear potential, *Adv. Nonlinear Stud.* **20** (2020), 557–578.
- [4] López-Gómez, J. and Omari, P., Regular versus singular solutions in quasilinear indefinite problems with sublinear potentials, (2021), *submitted*.