Strong solutions to singular discontinuous p-Laplacian problems

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The talk is devoted to discuss existence of solutions to a p-Laplacian problem whose reaction is singular (i.e., it blows up when the solution approaches zero) and possesses a null-measure set of discontinuity points. The techniques presented are based on regularization arguments, variational methods, regularity theory, and locality properties. Moreover, a problem exhibiting discontinuous convection terms (i.e., terms depending on the gradient of the solution) will be exposed. In this case, existence of solutions will be obtained via monotonicity techniques.

References

[1] U. Guarnotta, S.A. Marano, *Strong solutions to singular discontinuous p-Laplacian problems*, Commun. Contemp. Math. **28** (2026), Paper no. 2550067.

[2] U. Guarnotta, S.A. Marano, *On singular p-Laplacian problems with discontinuous convection terms*, preprint (ArXiv:2603.13811).

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