



ANALISYS SESSION

Boundary Weak Harnack Estimates and Regularity for Elliptic Operators in Divergence Form and Applications in PDEs.

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Monday, February 05, 2024.
16h30 - 17h10
Anfiteatro 11

Abstract.

We obtain a global extension of the classical Weak Harnack Inequality which extends and quantifies the HopfOleinik boundary-point lemma, for uniformly elliptic equations in divergence form, under the weakest assumptions on the leading coecients and on the boundary of the domain. Our main tool is the use of suitable barrier functions, which are solutions of auxiliaries problems and the C^1 -estimates up to the boundary.

Among the consequences is a boundary gradient estimate, due to Krylov and well-studied for non-divergence form equations, but completely novel in the divergence framework. Another consequence is a new more general version of the HopfOleinik lemma. Furthermore, we provide an application showing how to use this results in order to deduce a priori upper bounds and multiplicity of solutions for a class of quasilinear elliptic problems with quadratic growth on the gradient.

Joint work with Boyan Sirakov and Fiorella Rendón.

References

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