Albo Carlos Cavalheiro

An existence and approximation theorem for solutions of degenerate quasilinear elliptic equations

Comment.Math.Univ.Carolin. 59,1 (2018) 65 -80.

Abstract: The main result establishes that a weak solution of degenerate quasilinear elliptic equations can be approximated by a sequence of solutions for non-degenerate quasilinear elliptic equations.

Keywords: degenerate quasilinear elliptic equations; weighted Sobolev spaces AMS Subject Classification: 35J62, 35J70, 35D30

References

- Bresch D., Lemoine J., Guillen-Gonzalez F., A note on a degenerate elliptic equation with applications for lakes and seas, Electron. J. Differential Equations, vol. 2004 (2004), no. 42, 1–13.
- [2] Cavalheiro A.C., An approximation theorem for solutions of degenerate elliptic equations, Proc. Edinb. Math. Soc. 45 (2002), 363–389; doi: 10.1017/S0013091500000079
- [3] Cavalheiro A.C., Existence of solution for Dirichlet problem of some degenerate quasilinear elliptic equations, J. Adv. Res. Appl. Math. 6 (2014), no. 4, 46–58; doi: 10.5373/jaram.1978.022014
- [4] Colombo M., Flows of Non-Smooth Vector Fields and Degenerate Elliptic Equations: With Applications to the Vlasov-Poisson and Semigeostrophic Systems, Publications of the Scuolla Normale Superiore Pisa, 22, Pisa, 2017.
- [5] Fabes E., Kenig C., Serapioni R., The local regularity of solutions of degenerate elliptic equations, Comm. Partial Differential Equations 7 (1982), 77–116; doi:10.1080/03605308208820218
- [6] Fernandes J. C., Franchi B., Existence and properties of the Green function for a class of degenerate parabolic equations, Rev. Mat. Iberoamericana 12 (1996), 491–525.
- [7] Garcia-Cuerva J., Rubio de Francia J.L., Weighted Norm Inequalities and Related Topics, North-Holland Mathematics Studies, 116, North Holland Publishing Co., Amsterdam, 1985.
- [8] Heinonen J., Kilpeläinen T., Martio O., Nonlinear Potential Theory of Degenerate Elliptic Equations, Oxford Math. Monographs, The Clarendon Press, Oxford University Press, New York, 1993.
- [9] Kufner A., Weighted Sobolev Spaces, John Wiley & Sons, New York, 1985.
- [10] Muckenhoupt B., Weighted norm inequalities for the Hardy maximal function, Trans. Amer. Math. Soc. 165 (1972), 207–226.
- [11] Torchinsky A., Real-Variable Methods in Harmonic Analysis, Academic Press, San Diego, 1986.
- [12] Turesson B. O., Nonlinear Potential Theory and Weighted Sobolev Spaces, Lecture Notes in Math., 1736, Springer, Berlin, 2000.
- [13] Xu X., A local partial regularity theorem for weak solutions of degenerate elliptic equations and its applications to the thermistor problem, Differential Integral Equations 12 (1999), no. 1, 83–100.
- [14] Zeidler E., Nonlinear Functional Analysis and its Applications, II/B, Springer, New York, 1990.