ON DEGENERATE NON–UNIFORM ELLIPTIC PROBLEMS

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Abstract. We are interested in the degenerate problem:

$$b(\nu) - \text{div} A(\nu; \nabla g(\nu)) = f \quad \text{in } \Omega$$

with the boundary condition $\nu = a$, where $a: \partial \Omega \to \mathbb{R}$ is measurable such that $g(a) = 0$. We suppose that the vector field $A$ satisfies the Leray-Lions conditions, that $b, g$ are continuous, nondecreasing with $\lim_{r \to \pm \infty} |b + g(r)| < +\infty$, that $g$ has a flat region $[A_1, A_2]$ and is strictly increasing on $\mathbb{R} \setminus [A_1, A_2]$ for some $A_1 \leq 0 \leq A_2$. Using monotonicity methods, we prove the existence and uniqueness of a renormalized entropy solution (with possibly infinite values).


Keywords and phrases: non-uniformly elliptic problem, non-homogenous boundary conditions, continuous flux, degenerate diffusion, infinite valued functions.

REFERENCES