ANALYSIS SEMINAR

Existence and unicity of positive solution to a rapidly growing problem via sub-supersolution method

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Abstract. In this paper we study the validity of the sub-supersolution method for the equation

$$\begin{cases} -\operatorname{div}(K(x)\nabla u) = K(x)|x|^{\alpha-2}f(x,u) \text{ in } \mathbb{R}^N, \\ u > 0 \text{ in } \mathbb{R}^N, \end{cases}$$

where $N \ge 3$, $K(x) = exp(|x|^{\alpha}/4)$, $\alpha \ge 2$ and f is a continuous function, the hypothesis will be given later. We apply the method for f singular and f like a logistic function, showing in both cases existence and uniqueness of positive solution.