

Some uniqueness results for strongly singular problems

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We consider a strongly singular problem of the form

$$\begin{cases} -\Delta u = \frac{f(u)}{u^\delta} & \text{in } \Omega, \\ u = 0 & \text{on } \partial\Omega, \end{cases}$$

where Ω is a bounded smooth domain in \mathbb{R}^N , $\delta \geq 1$ and $f : [0, +\infty[\rightarrow]0, +\infty[$ is continuous with the property that the function $u \rightarrow \frac{f(u)}{u^{1+\delta}}$ is strictly decreasing in $]0, +\infty[$. With further restriction on either the behavior of f near the origin or on the range of δ , we prove that the problem admits at most one positive solution.

Based on [1].

References

- [1] M. Chhetri, F. Faraci, K. Silva, *Some uniqueness results for strongly singular problems*, submitted.