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## Entropy Solutions to Nonlinear Weighted Degenerate Problems with Singular Data

### Communication Info

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- (1) Degenerate coercivity.
- (2) Entropy solutions.
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- (4) Weighted Sobolev spaces.

### Abstract

In this work [3], we study the existence of entropy solutions for a class of nonlinear elliptic problems driven by a degenerate coercive operator and involving a singular right-hand side. A model case is given by

$$\begin{cases} -\operatorname{div} \left( \frac{\omega(x)|\nabla u|^{(p-2)} \nabla u}{(1+|u|)^{\theta(p-1)}} \right) = \frac{f}{u^\gamma} & \text{in } \Omega \\ u \geq 0 & \text{in } \Omega \\ u = 0 & \text{on } \partial\Omega \end{cases}$$

$\Omega \subset \mathbb{R}^N$  ( $N \geq 2$ ),  $1 < p < N$ ,  $\theta \geq 0$ ,  $\gamma \geq 0$ ,  $\omega$  is a weight function, and  $f \in L^1(\Omega)$  with  $f \geq 0$ .

Under suitable assumptions on the parameters and on the weight function, we establish the existence of at least one entropy solution. Our results extend and complement several contributions on singular elliptic equations and degenerate operators [1,2,4], and provide new insights into the interplay between degeneracy and singular nonlinearities.

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