

# Renormalized solutions of an elliptic equation with a degenerate diffusion and a source term in $L^1$

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We study the following problem in a bounded smooth domain  $\Omega$  in  $\mathbb{R}^N$ ,  $\Gamma$  being its boundary

$$\begin{cases} -\operatorname{div}(\rho \nabla u) + \frac{u}{\rho} = f & \text{in } \Omega, \\ u = 0 & \text{on } \Gamma, \end{cases} \quad (0.1)$$

where  $\rho$  is the distance to  $\Gamma$ . We study the case  $f \in L^1(\Omega)$ . We define what a renormalized solution is for this problem. We then show the existence and the uniqueness of such a renormalized solution.