A singular degenerate elliptic equations of the Hénon-type involving the Grushin operator

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Abstract

In the work under consideration, we study the existence of nontrivial radial solutions and we prove a nonexistence result for a class of singular degenerate elliptic problems involving the Grushin operator. The existence of at least one nontrivial weak solution is done by the Mountain Pass Theorem of Ambrosetti and Rabinowitz combined with Ni type radial lemma, with this, we were able to consider the exponent greater than usual Sobolev exponent. Furthermore, we establish some Pohozaev-type identity and as a consequence we show that there is no nontrivial solution under certain conditions. One of the great technical difficulties, in this sense, is the presence of the singularity in the differential operator.

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