

On the classification of entire solutions of quasilinear elliptic equations

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We study entire solutions of quasilinear elliptic equations (possibly very degenerate and/or very singular) of the form

$$\operatorname{div} \mathcal{A}(x, u, Du) = \mathcal{B}(x, u, Du), \quad x \in \mathbf{R}^N \quad (*)$$

In particular, under some new and very general assumptions on \mathcal{A} and \mathcal{B} , we prove that equation (*) has the following *strong Bernstein-Liouville property*:

$$u \equiv 0 \quad \text{is the only entire solution of equation (*)}.$$

No conditions are placed on the behavior of the solutions at infinity, neither on their sign. We also investigate the behavior of solutions when the parameters of the problem do not allow the *Bernstein-Liouville property*, showing thus, that the afore-mentioned results are essentially sharp. This is a joint work with James Serrin.