



EXISTENCE OF A NONTRIVIAL SOLUTION FOR A CLASS OF SUPERQUADRATIC DEGENERATE ELLIPTIC SYSTEMS

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Abstract

We study a class of superquadratic degenerate elliptic systems of the form

$$\begin{cases} -\operatorname{div}(h(x)\nabla u_i) + a_i(x)u_i = f_i(x, u_1, u_2, \dots, u_m), & x \in \Omega, \\ u_i|_{\partial\Omega} = 0, & i = 1, 2, \dots, m, \end{cases}$$

where $\Omega \subset R^N$ ($N \geq 3$) is an open bounded domain with smooth boundary $\partial\Omega$, the measurable, nonnegative diffusion coefficient h is allowed to vanish in Ω , and the potentials $a_i(x)$ may change sign and the nonlinearities $f_i \in C(\Omega, R^m)$ for $i = 1, 2, \dots, m$. A nontrivial solution is obtained for the superquadratic degenerate elliptic systems by variational methods. Recent results in the literature are generalized and significantly improved.

Keywords and phrases: degenerate elliptic systems, local linking, superquadratic.

