

On some nonlinear boundary value problems in the upper half-space

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We consider the nonlinear boundary value problem

$$-\Delta u - \frac{1}{2}(x \cdot \nabla u) = f(\lambda, x, u), \text{ in } \mathbb{R}_+^N, \quad \frac{\partial u}{\partial \nu} = g(\mu, x', u), \text{ on } \partial \mathbb{R}_+^N,$$

where $\mathbb{R}_+^N = \{(x', x_N) : x' \in \mathbb{R}^{N-1}, x_N > 0\}$ is the upper half-space and $\lambda, \mu > 0$ are parameters. We obtain results depending on the growth of the functions f and g concerning u , considering in some cases supercritical growth. The talk collects some results done in collaboration with Rodolfo Oliveira (UnB), João Pablo Silva (UFPA) and Karla Sousa (UFT).