

## ANALYSIS SEMINAR

**Multiplicity of solutions for a nonlinear boundary value problem in the upper half-space****Karla Carolina Vicente de Sousa**

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Time: 10:00 am

**Abstract.** In this talk we present some existence and multiplicity results for the nonlinear boundary value problem

$$-\Delta u - \frac{1}{2}(x \cdot \nabla u) = \lambda a(x)|u|^{q-2}u, \text{ in } \mathbb{R}_+^N, \quad \frac{\partial u}{\partial \nu} = b(x')|u|^{p-2}u, \text{ on } \partial\mathbb{R}_+^N,$$

where  $\mathbb{R}_+^N = \{(x', x_N) : x' \in \mathbb{R}^{N-1}, x_N > 0\}$  is the upper half-space,  $N \geq 3$ ,  $\lambda > 0$  is a parameter and  $1 < q < 2 < p \leq 2_* = 2(N-1)/(N-2)$ . The potentials  $a$  and  $b$  satisfy mild conditions which allow us to use variational methods. In some results, they can be indefinite in sign. The results presented in this talk can be found in [1].

**References**

- [1] M.F. Furtado and K.C.V. de Sousa. *Multiplicity of solutions for a nonlinear boundary value problem in the upper half-space*. J. Math. Anal. Appl. **493** (2021), no. 2, 124544.