1142-35-218 **Simon Bortz**, **Steve Hofmann**, **Jose Luis Luna*** (jlwwc@mail.missouri.edu), **Svitlana Mayboroda** and **Bruno Poggi**. *Sovability of Elliptic Equations with Lower Order Terms.*

The study of boundary value problems for second order elliptic equations of the form

$$-\mathrm{div} A\nabla u = 0 \qquad \text{in } \mathbb{R}^{n+1}_+, \tag{1}$$

for an elliptic matrix A, has a long and celebrated history. In this talk we will focus on generalizing well-posedness of the standard Boundary Value Problems (Dirichlet, Neumann and Regularity) to equations with lower order terms of the form

$$-\mathrm{div}(A\nabla u + B_1 u) + B_2 \cdot \nabla u + Vu = 0, \qquad \text{in } \mathbb{R}^{n+1}_+. \tag{2}$$

Here we will assume the lower order terms lie in the critical spaces

$$B_i \in L^n(\mathbb{R}^n; \mathbb{C}^{n+1}), \quad V \in L^{n/2}(\mathbb{R}^n),$$

with $\|B_i\|_{L^n(\mathbb{R}^n)}$, $\|V\|_{L^{n/2}(\mathbb{R}^n)}$ small. Finally we will require that all the coefficients in (**??**) are independent of the vertical variable.

Our results state roughly that, under the above hypotheses on the lower order terms, the well-posedness (suitably defined) in $L^2(\partial\mathbb{R}^{n+1}_+)$ for (**??**) is inherited from the corresponding property for the equation (**??**).

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