spaces such as weighted Lebesgue, Lorentz and Morrey spaces. These results extend and complement the well-known fractional Leibniz rules corresponding to the case of a multiplier identically equal to one and, even in such situation, they lead to new estimates.

Continuous solutions for divergence-type equations associated to elliptic systems of complex vector fields

Tiago Picon (Universidade de São Paulo - Ribeirão Preto)
picon@ffclrp.usp.br

Abstract: In this talk, we characterize all the distributions $F \in \mathcal{D}'(U)$ such that there exists a continuous weak solution $v \in C(U, \mathbb{C}^n)$ (with $U \subset \Omega$) to the divergence-type equation

$$L_1^* v_1 + ... + L_n^* v_n = F,$$

where $\{L_1, \ldots, L_n\}$ is an elliptic system of linearly independent vector fields with smooth complex coefficients defined on $\Omega \subset \mathbb{R}^N$. In case where $(L_1, \ldots, L_n)$ is the usual gradient field on $\mathbb{R}^N$, we recover the classical result for the divergence equation proved by T. De Pauw and W. Pfeffer. Its proof is based on the closed range theorem and inspired by [1] and [3] in the classical case. Our method slightly differs from theirs by relying on the Banach-Grothendieck theorem and introducing tools from pseudodifferential operators, useful in our local setting of a system of complex vector fields with variable coefficients(this is a joint work with Prof. Laurent Moonens (University of Paris-Sud, Orsay).