ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

10. Partial Differential Equations

1991 Mathematical Subject Classification: 35, 46

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Splitting of differential complexes.

We consider exact sequences of continuous, open onto their images, linear operators:

$$0 \longrightarrow \ker T_0 \longrightarrow X_0 \xrightarrow{T_0} X_1 \xrightarrow{T_1} X_2 \xrightarrow{T_2} \ldots, \tag{1}$$

where all X_i are either equal to the spaces of smooth functions $C^\infty(\Omega_i)$ or to the spaces of distributions $\mathcal{D}'(\Omega_i)$, $\Omega_i \subseteq \mathbb{R}^n$ are open sets. Such complexes appear in the theory of systems of PDE's when T_i are matrices of linear PDO with constant coefficients. We show by purely functional analytic methods that in the $\mathcal{D}'$-case $T_i : X_i \to \operatorname{Im} T_i$ has a continuous linear right inverse for every $i \geq 1$. The same holds in the C^∞-case whenever T_i are matrices of convolution operators.

This joint work with D. Vogt (Wuppertal) strengthens earlier results of Palamodov.