L_p-Solvability of Higher order elliptic and parabolic systems

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ABSTRACT

We study the solvability in Sobolev spaces for divergence form higher order parabolic systems. We establish the L_p-estimates for the system in the whole space and on a half space under the assumption that the leading coefficients $A^{\alpha\beta}$ are only measurable in (t, x_1) and have small mean oscillations in the other variables. In addition, we assume that $A^{\hat{\alpha}\hat{\alpha}}$, $\hat{\alpha} = (m, 0, \dots, 0)$, is measurable in t (or x_1) and has a small mean oscillation in the other variables. We also establish the solvability for the system on a Reifenberg flat domain under the assumption that the leading coefficients are merely measurable in t and have small mean oscillations with respect to x.

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