cases	doc_1	doc_2
authors	Suslina, T.	Tatiana Suslina
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abstract		In $L_2({\mathbb R}^d; {\mathbb C}^n)$, we consider a matrix strongly elliptic differential operator ${A}_\varepsilon$ of order $2p$, $p \geqslant 2$. The operator ${A}_\varepsilon$ is given by ${A}_\varepsilon = b(\mathbf{D})^* g(\mathbf{x}/\varepsilon) b(\mathbf{D})$, $\varepsilon >0$, where $g(\mathbf{x})$ is a periodic, bounded, and positive definite matrix-valued function, and $b(\mathbf{D})$ is a homogeneous differential operator of order p. We prove that, for fixed $\tau \in {\mathbb R}$ and $\varepsilon \to 0$, the operator exponential $e^{-i \tau {A}_\varepsilon}$ converges to $e^{-i \tau {A}^0}$ in the norm of operators acting from the Sobolev space $H^s({\mathbb R}^d; {\mathbb C}^n)$ (with a suitable s) into $L_2({\mathbb R}^d; {\mathbb C}^n)$. Here A^0 is the effective operator. Sharp-order error estimate is obtained. The results are applied to homogenization of the Cauchy problem for the Schr\"odinger-type equation $i \partial_\tau {\mathbf u}_\varepsilon = {A}_\varepsilon {\mathbf u}_\varepsilon + {\mathbf F}$, ${\mathbf u}_\varepsilon\vert_{\tau=0} = \boldsymbol{\phi}$.
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decision	id
DUPLICATES	362