

An operator-asymptotic approach to periodic homogenization applied to equations of linearized elasticity

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We explain an operator-asymptotic approach to homogenization for periodic composite media. This approach was developed by Cherednichenko and Velčić in the context of thin elastic plates, and here we demonstrate the approach under the simpler setting of equations of linearized elasticity.

As a consequence, we obtain $L^2 \rightarrow L^2$, $L^2 \rightarrow H^1$, and higher-order $L^2 \rightarrow L^2$ norm-resolvent estimates. The correctors for the $L^2 \rightarrow H^1$, and higher-order $L^2 \rightarrow L^2$ results are constructed from boundary value problems that arise during the asymptotic procedure.

This is joint work with Josip Žubrinić (University of Zagreb).