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A two-scale approach for efficient on-the-fly operator assembly in massively parallel high performance multigrid codes

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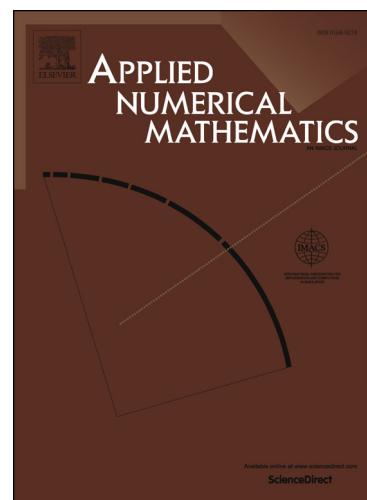
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Highlights

- efficient on-the-fly stencil assembly on curved domains in matrix-free FE codes.
- a priori error estimation for presented approach.
- suitable for general curved geometries and complex PDEs.
- systematic performance optimization based on Execution-Cache-Memory model.
- weak and strong scaling results on current peta-scale architecture.

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