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MATRIX-COMPRESSION PROPERTY OF BEYLKIN-TYPE TRUNCATION SCHEME FOR WAVELET BEM
Kazuhiro KORO¹⁾ and Kazuhisa ABE²⁾

1) Graduate School of Science and Technology, Niigata University

2) Department of Civil Engineering and Architecture, Niigata University

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In the present paper, we investigate theoretically and experimentally the number of non-zero matrix entries generated by the wavelet BEM with the Beylkin-type compression algorithm. The Beylkin-type algorithm, which is based on a prescribed *level-independent* threshold, retains the asymptotic convergence rate of BE solutions, like widely-used *level-independent* compression schemes. The coefficient matrix compressed by the Beylkin-type scheme has $O(N^{1+\gamma})$ ($0 < \gamma < 1$, N : degree of freedom (DOF)) non-zero entries; level-dependent schemes enable us to reduce the matrix entries up to $O(N(\log N)^\alpha)$ ($\alpha \geq 1$). However, for matrix compression using the Beylkin-type scheme the compression rate is greater than or comparable to that of the Schneider's level-dependent scheme, in the moderate DOF range.

Key Words: wavelet BEM, matrix compression scheme, large-scale problems

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