



Accelerating wave propagation modeling in the frequency domain using Python

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Python is a dynamic programming language adopted in many science and engineering areas. We used Python to simulate wave propagation in the frequency domain. We used the Pardiso matrix solver to solve the impedance matrix of the wave equation. Numerical examples shows that Python with numpy consumes longer time to construct the impedance matrix using the finite element method when compared with Fortran; however we could reduce the time significantly to be comparable to that of Fortran using a simple Numba decorator.