Chair for Computation in Engineering
Chair of Computational Modeling and Simulation

Software Lab:

Mechanics: ★★★★☆
Mathematics: ★★★☆☆
Programming: ★★★★☆

Harmonic analysis of structures comprising materials with different damping characteristics

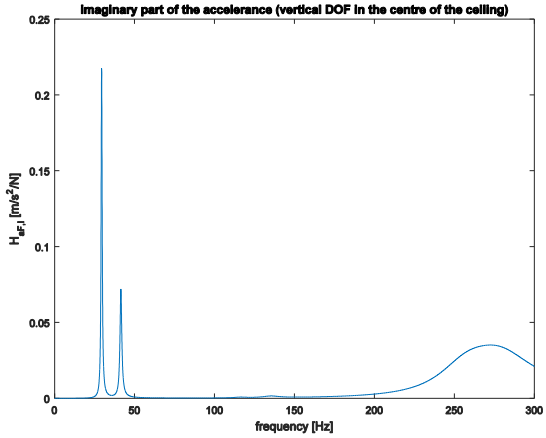
Setting

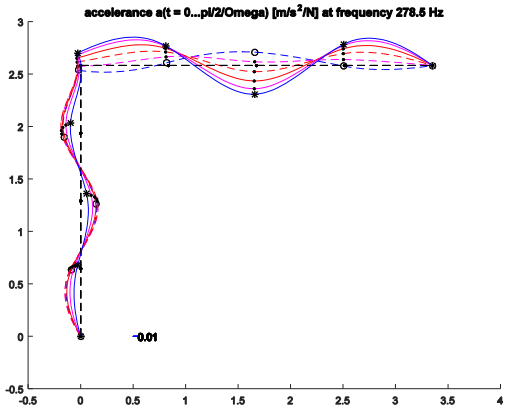
The behavior of a viscously damped, linear elastic structure under a periodic or transient load can be determined by splitting the load into its harmonic components and by computing the response of the structure resulting from each component in a steady state. The latter step can be simplified, if the structural response under harmonic unit load has been calculated previously within the relevant frequency range. This is done in the harmonic analysis.

Task

Enable the finite element software AdhoC to run a harmonic analysis of structures which consist of materials with different damping characteristics. Therefore, you will implement

- the derivation of element damping matrices and their assembling into a global damping matrix
- a method to solve complex systems of equations





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References

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[2] U. Heißerer, “AdhoC 4–Technical Guide.” Lehrstuhl für Bauinformatik, Technische Universität München, 2010