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Optimisation of building vibration isolation by means of numerical methods

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Ground-borne vibrations pose a steadily increasing environmental problem in densely populated areas of large cities. Although not the cheapest, the application of resilient elements in the construction of new buildings is an effective and viable method. Obviously, experimentation with parameters and placement of the isolators is not possible in this case. Therefore, a careful and watchful optimization of the static and dynamic characteristics of the supporting elements is a must. The proposed paper gives an overview of the vibration isolation design and reports on the expected effect of some basic design versions of a typical multi-storey building. Standard structural finite element method is used as a basic design tool, but a number of vibro-acoustic aspects are also considered and treated. Experimental results as well as comparisons of measurements and predictions will be reported too.