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Author's reply ☆

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When doing measurements on the test structure, the following items were noticed:

- The shapes of measured modes are close to the theoretical modes, but differ in the area of clamping. The measured shape is not perpendicular to the wall of the cavity as the theoretical one is.
- The structural damping factor used for computations (0.8%) is greater than the measured damping factor of a free–free supported steel plate (0.2%).
- The eigenfrequencies of measured modes were time dependant. The measurement of displacement at 121 location points over the plate took a long time and we noticed that eigenfrequencies of measured modes could fluctuate even without dismantling the test structure.

The two first items can be explained by the imperfection of the clamping as we said in our article, but the third one confirms buckling of the plate as Laura and Vera said in Ref. [1].

Although the making off of the structure was very precise (1 μm), the tightening torque of bolts was measured and the alignment of the parts of structure was also checked; two consecutive mounting lead to different measured eigenfrequencies. Temperature variations can induce stresses varying in the bolts and then modify the buckling of the plate and consequently the eigenfrequencies. In this case, the small variations of these frequencies are about one in thousand.

Actually, the imperfection of clamping is not the only factor which is involved in the difference between measured and theoretical modes.

But in our article we only focused on a "simple" structure and a "simple" model in order to validate a medium-frequency computational method. In this method, the meshing of the plate uses "3-node-plate" elements (only bending displacement was taken into account and no in-plane movement); that is to say we used a two-dimensional approach. So, the simplest and more efficient, but not very realistic, way to obtain theoretical modes close to the measured modes in this approach was to modify Young's modulus, as we said in our article.

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