VIB2021: Damping

Number of participants: 20

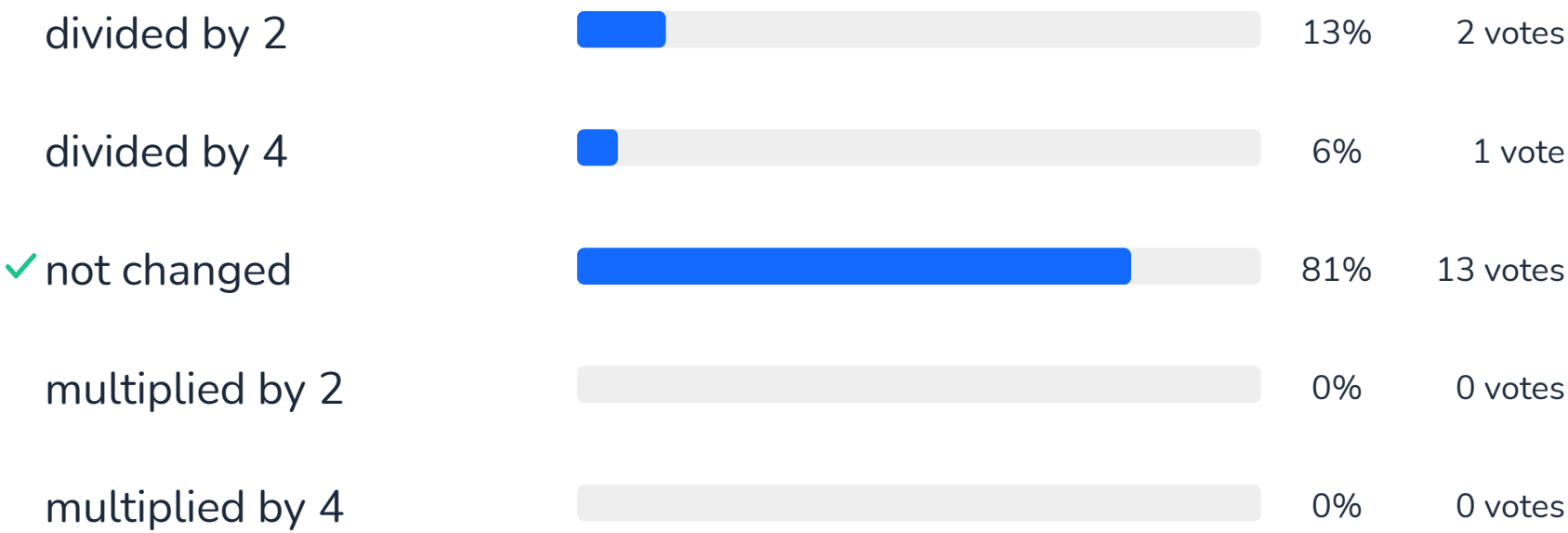
1

If the damping in a structure is doubled, the level of vibration when it is excited at resonance is

multiplied by 2		0%	0 votes
✓ divided by 2		81%	13 votes
not changed		0%	0 votes
multiplied by 4		0%	0 votes
divided by 4		19%	3 votes

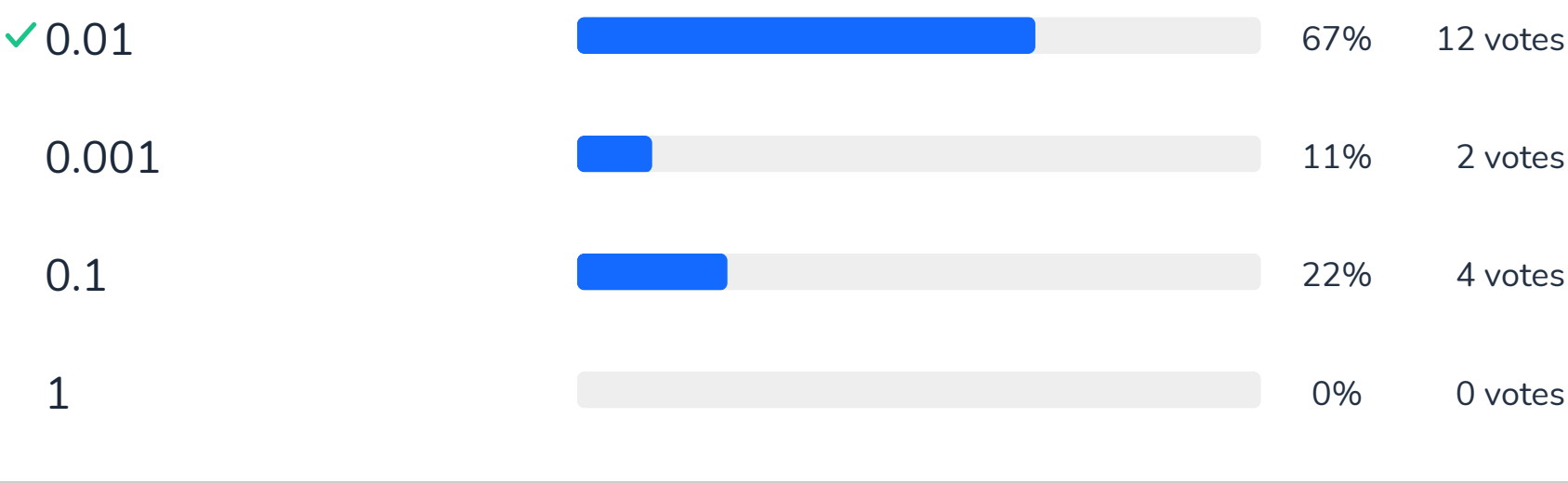
2

If the damping of a structure is multiplied by 2, the level of vibrations when the structured is excited away from the resonances is



3

In civil and mechanical engineering, a typical value of global damping factors for structures is



4

When using a loss factor for the materials to represent damping in a structure made of a single material, the damping coefficient is

✓ constant for all modes		54%	7 votes
linearly increasing with the frequency of the mode		15%	2 votes
inversely proportional to the frequency of the mode		31%	4 votes

5

Cite two methods which allow to determine the damping of the first mode of a structure. Which one can be used to estimate the damping of higher modes as well ?

Constrained layer

Half bandwith method

Logarithmic dependent method
Half power method
Only half power

logarithmic decrement for first mode and equivalent damping for higher modes

Equivalent viscous damping

In time domain and freq domain. Freq domain can be used on other freq

Log Dec

6

What is the difference between constrained and unconstrained layer damping treatment ?

Constrained: damping material is placed between two layers of (different) material
Unconstrained: only one material is attached to damping material

in unconstrained treatment there is one layer of extra material, in constrained treatment the structure is sandwiched between two layers

Constrained layer increase damping also in shear, not only in extension

Constrained has broad band effect

One is having two layer other is having three layer

7

Explain why the grey line crosses the black curve exactly at w/wn=1 ?

We want actual and equivalent damping to be equal at resonance

Damping is the most important at resonance because there are the highest vibrations

because w/wn represents resonance, which is the only place where damping has effect

Because the region around the resonant freq is most interesting