DOS 2021 : Continuous systems

Number of participants: 15

1

A continuous system has

	as many eigenfrequencies as there are joints in the structure	21%	3 votes
✓	an infinite number of eigenfrequencies	79%	11 votes
	it depends on the frequency band of the excitation signal	0%	0 votes

2

In practice, the number of dofs in a finite element is usually dictated by

The dynamics of the system		8%	1 vote
✓ The geometry of the system		69%	9 votes
The frequency of excitation of the system		23%	3 votes

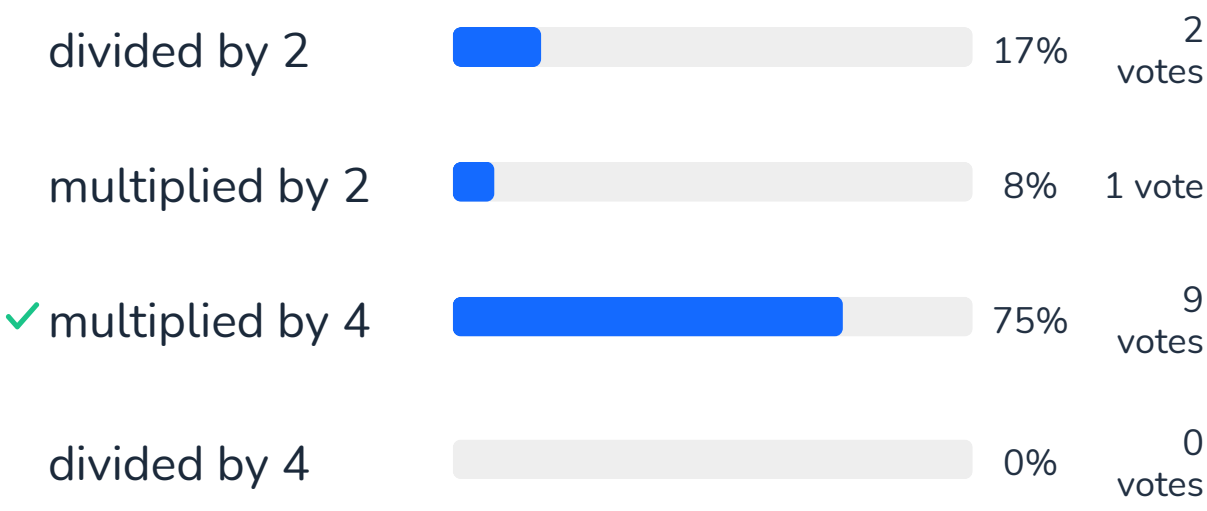
3

If the length of a bar is divided by 4, its natural frequency corresponding to traction-compression modes is

	divided by 2	0%	0 votes
	multiplied by 2	0%	0 votes
✓	multiplied by 4	80%	8 votes
	divided by 4	20%	2 votes

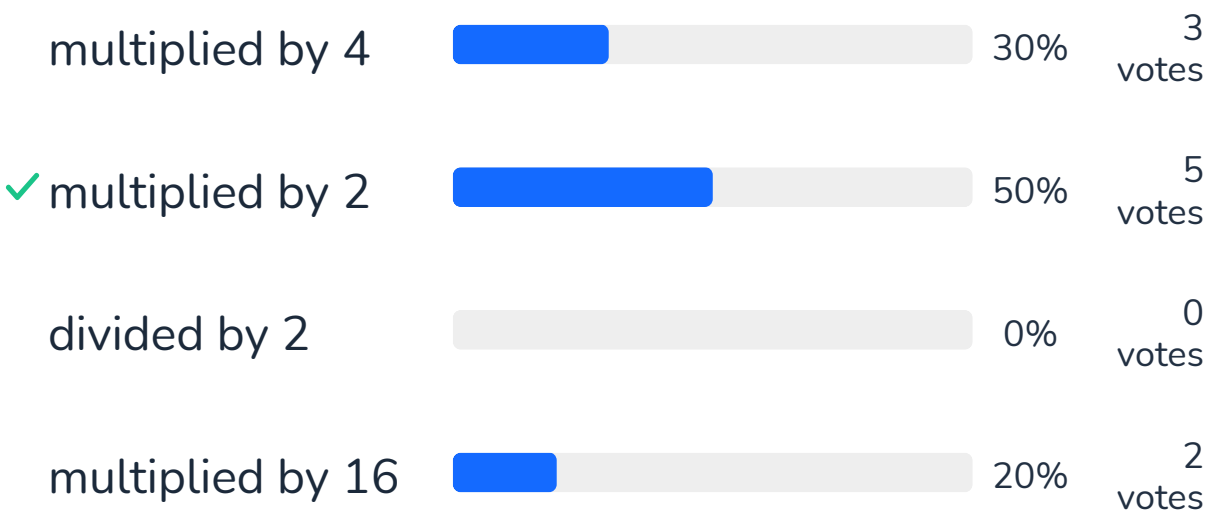
4

If the length of a beam is divided by 2, its first natural frequency corresponding to a bending mode shape is



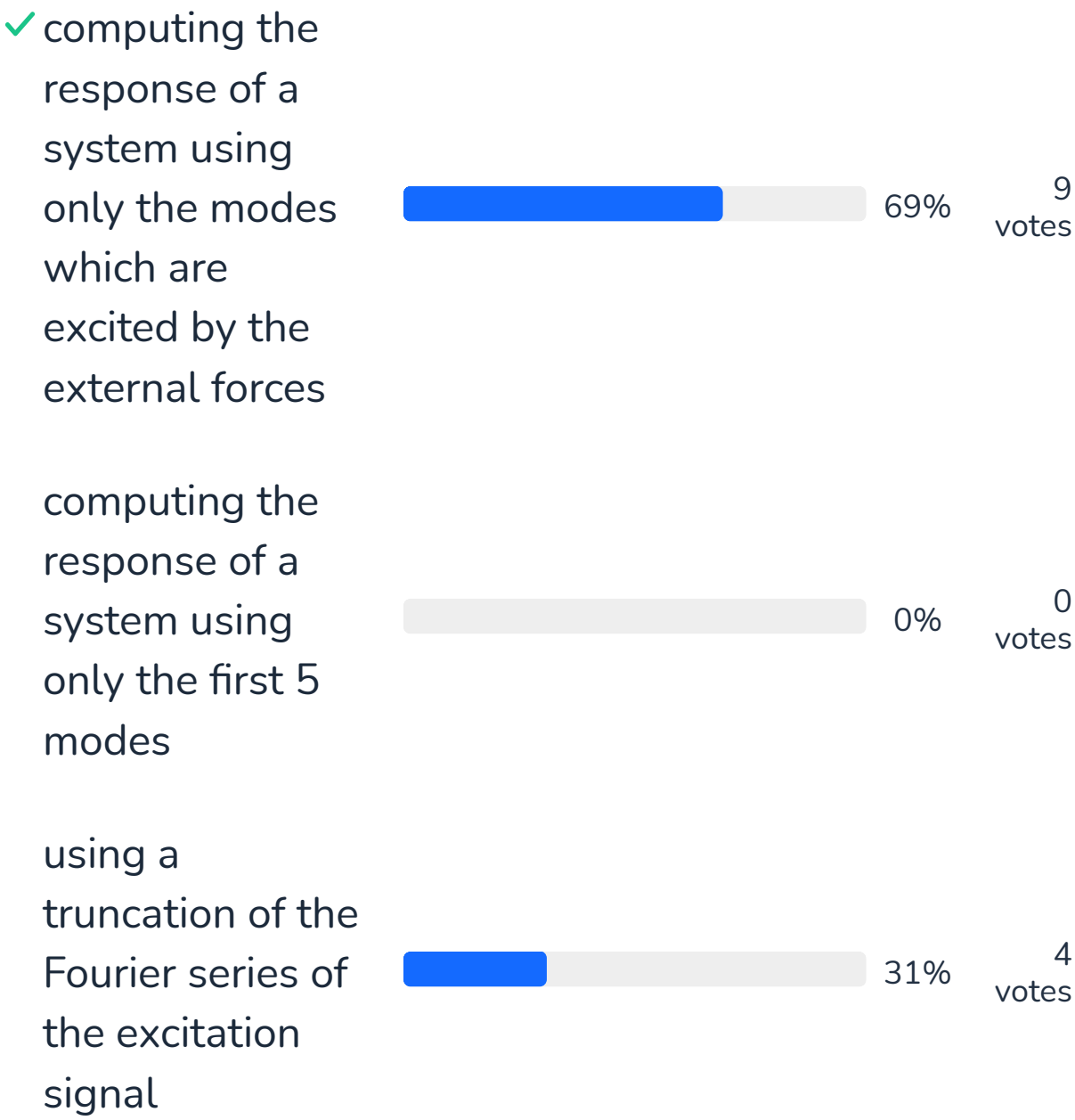
5

If the stiffness of a beam is multiplied by 4, its natural frequencies are



6

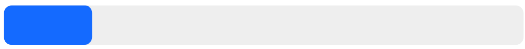
Modal truncation consists in



7

When performing modal truncation, the usual practice consists in

taking strictly the number of modes present in the frequency band of interest



17% 2 votes

✓ taking the number of modes in the band [0 1.5 wmax] where wmax is the max frequency of the band of interest

75% 9 votes

taking the number of modes in the band [0 wmax/1.5] where wmax is

8% 1 vote

the max
frequency of the
band of interest

8

Consider a bar for which the ten first natural frequencies are at 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 Hz. You wish to compute the response using the truncation in the modal basis, from 0 to 5 Hz. How many modes should you use ?

5 modes		46%	6 votes
10 modes		8%	1 vote
✓ 8 modes		46%	6 votes