

DOS2020_Continuous_systems

Number of participants: 19

1

A continuous system has

as many
eigenfrequencies as
there are joints in the
structure



✓ an infinite number of
eigenfrequencies



it depends on the
frequency band of the
excitation signal



2

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

The dynamics of the system



6%

1 vote

✓ The geometry of the system



81%

13 votes

The frequency of excitation of the system

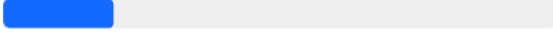
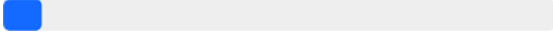

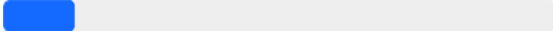


13%

2 votes

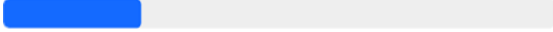
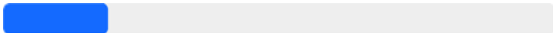

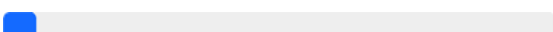
3

If the length of the bar is divided by 4, its natural frequency is

divided by 2		20%	3 votes
multiplied by 2		7%	1 vote
✓ multiplied by 4		60%	9 votes
divided by 4		13%	2 votes


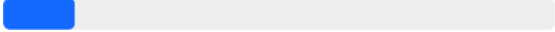
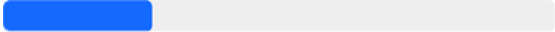
4

If the length of a beam is divided by 2, its first natural frequency is

divided by 2		25%	4 votes
multiplied by 2		19%	3 votes
✓ multiplied by 4		50%	8 votes
divided by 4		6%	1 vote

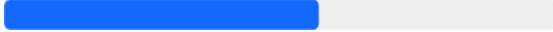
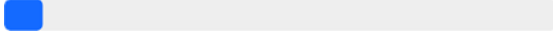
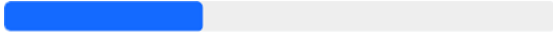
5

Modal truncation consists in

✓ computing the response of a system using only the modes which are excited by the external forces		60%	9 votes
computing the response of a system using only the first 5 modes		13%	2 votes
using a truncation of the Fourier series of the excitation signal		27%	4 votes

6

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		57%	8 votes
10 modes		7%	1 vote
✓ 8 modes		36%	5 votes

