

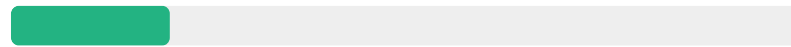
# Vibrations and Acoustics - Introduction

Number of participants: 41

1

## Are you happy today

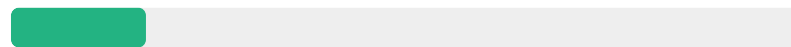
Yes I am really happy



20%

7 votes

No, I am unhappy, I would rather be on vacation



17%

6 votes

I am Ok but I need a coffee



63%

22 votes

2

## The mechanism of vibrations results from

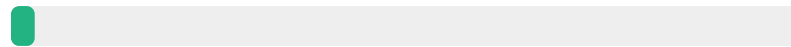
A transfer between  
kinetic and potential  
energy



94%

29 votes

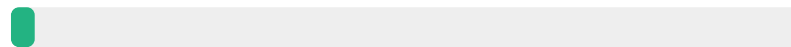
A transfer between kinetic  
and dissipated energy



3%

1 vote

A transfer between  
potential and dissipate  
energy

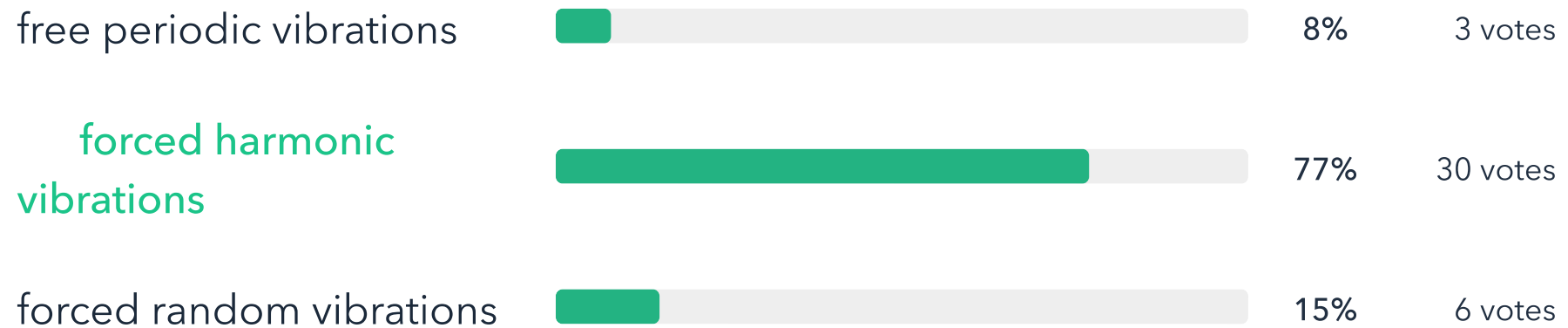


3%

1 vote

3

## The vibrations of a working washing machine can be classified as



4

Which of these vibrations is a forced random vibration ?

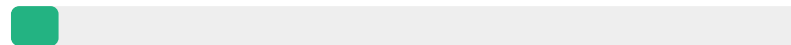
The vibration of a building due to wind excitation



58%

21 votes

The vibration of a car due to the engine vibrations



6%

2 votes

The vibrations of a bridge due to an earthquake



69%

25 votes

5

## Vibrations in mechanical engineering are becoming more and more important because:

the sources of vibrations are increasing



68%

26 votes

the structures are becoming more and more prone to vibrations



47%

18 votes

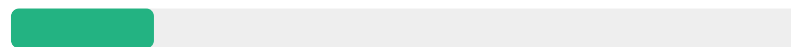
comfort demands are increasing



76%

29 votes

the engineers tend to design the structures to



18%

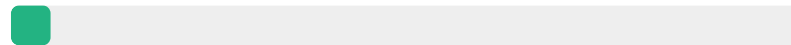
7 votes

be sensitive to vibrations

6

When excited at a frequency below the natural frequency of a mass-spring system, the motion of the mass is

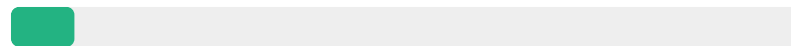
180° out-of-phase with the excitation



5%

2 votes

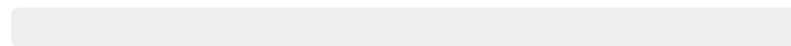
90° out-of-phase with the excitation



8%

3 votes

30° out-of-phase with the excitation



0%

0 votes

in-phase with the excitation



87%

33 votes



7

When excited at a frequency above the natural frequency of a mass-spring system, the motion of the mass is

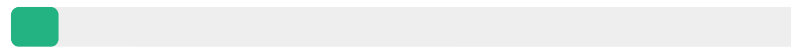
180° out-of-phase with the excitation



89%

32 votes

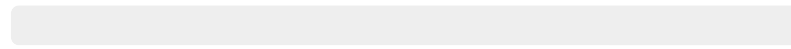
90° out-of-phase with the excitation



6%

2 votes

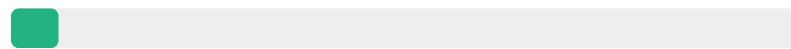
60° out-of-phase with the excitation



0%

0 votes

random

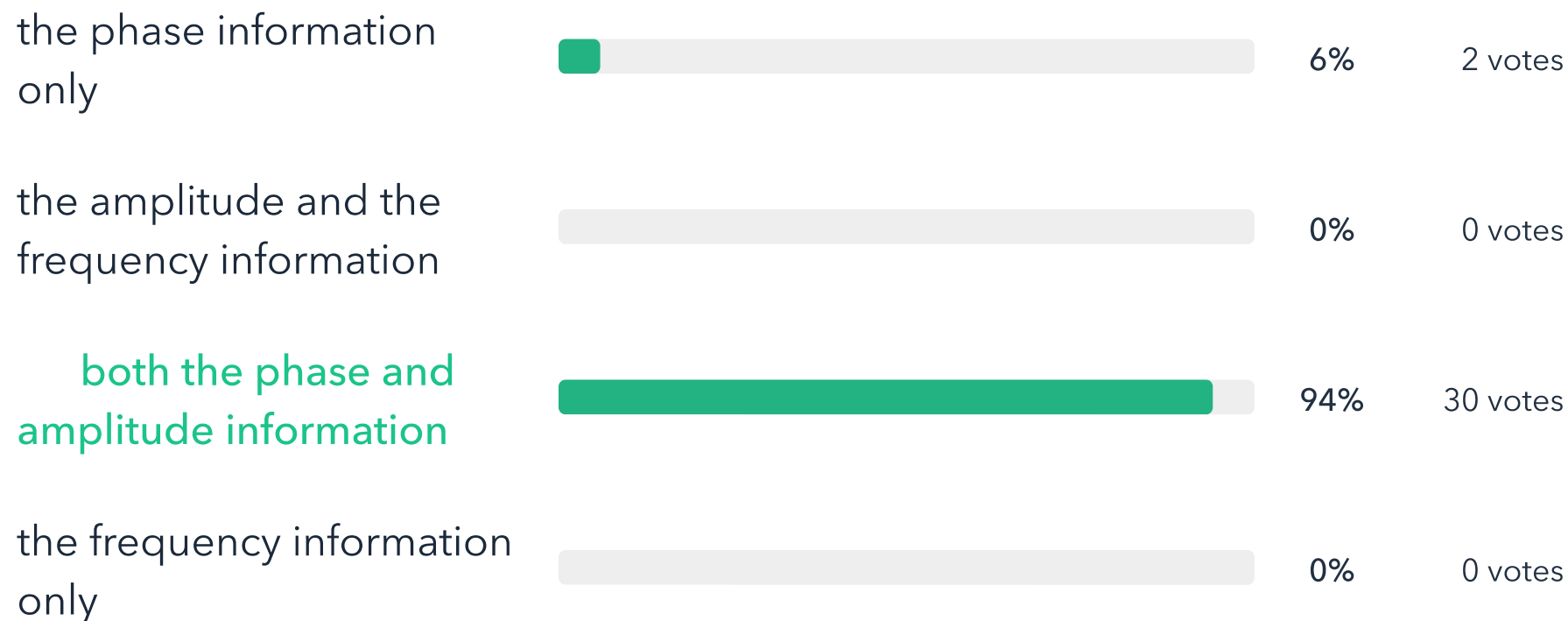


6%

2 votes

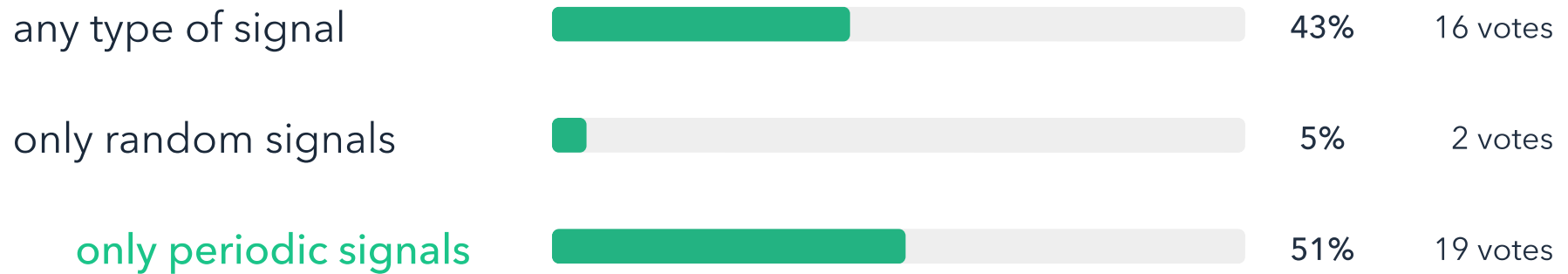
8

## When describing a harmonic motion, the complex amplitude vector contains



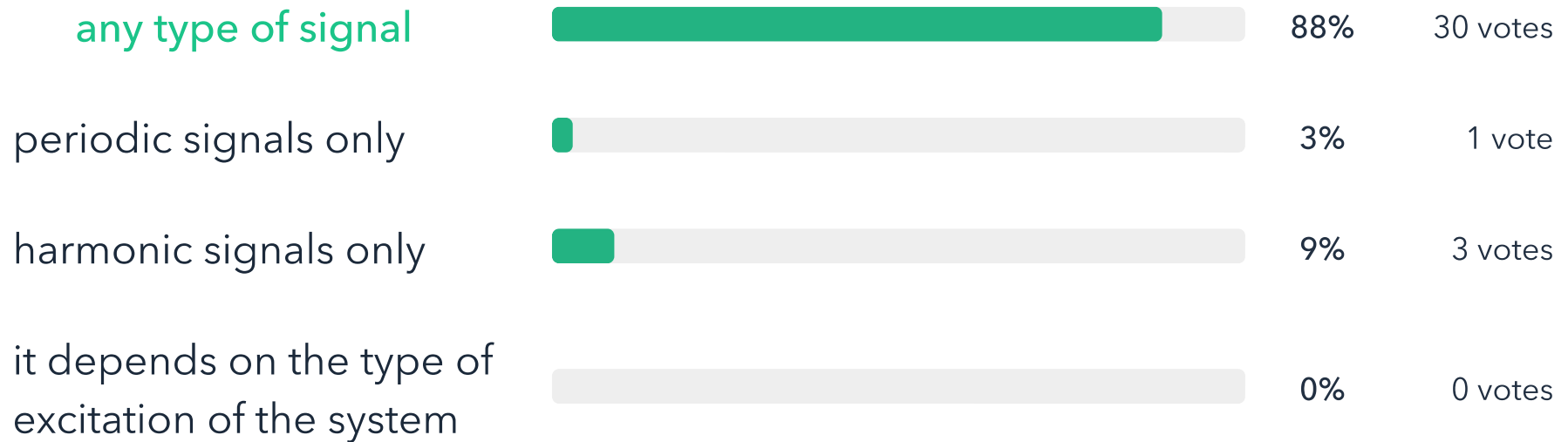
9

## The discrete Fourier transform applies to



10

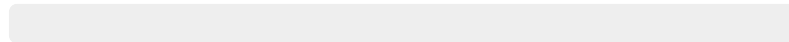
## The continuous Fourier transform applies to



11

The continuous Fourier transform of a rectangle (pulse) is

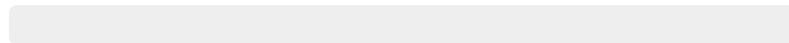
a cosine function



0%

0 votes

a sine function



0%

0 votes

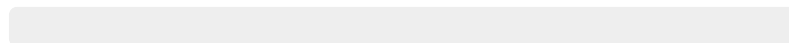
a sinc function



100%

33 votes

a complex function which  
cannot be computed  
analytically



0%

0 votes

12

## Convolution in the time domain corresponds to

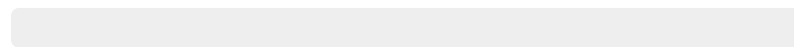
multiplication in the frequency domain



100%

31 votes

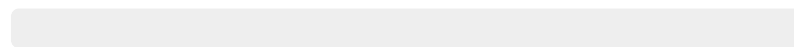
convolution in the frequency domain



0%

0 votes

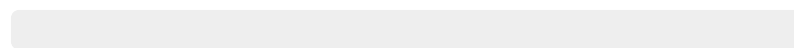
deconvolution in the frequency domain



0%

0 votes

division in the frequency domain



0%

0 votes

