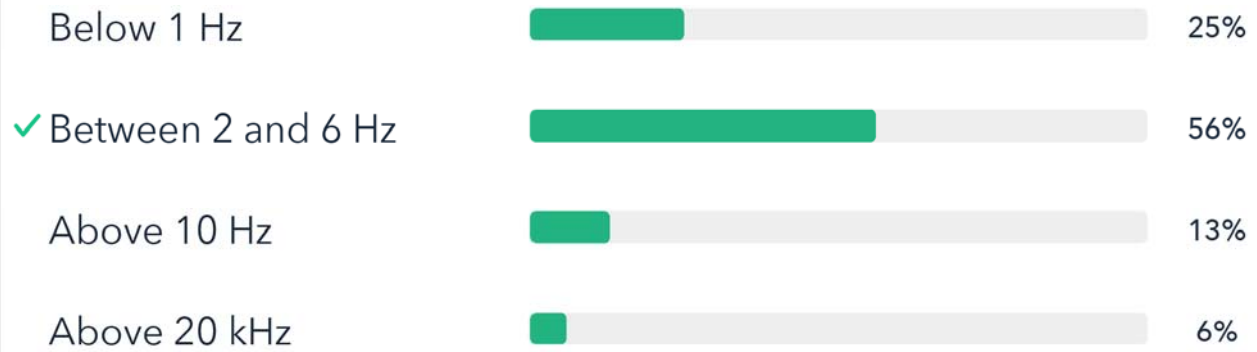


# DOS2018-Signal-Processin

Number of participants: 23

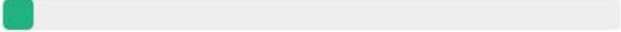
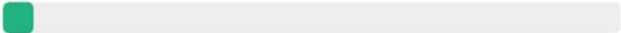

1

## The typical range of frequencies of pedestrian induced vibrations is




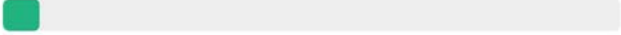
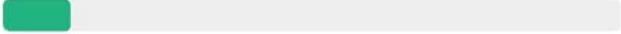
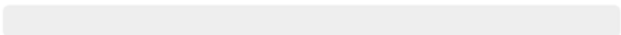
2

## The discrete Fourier transform applies to

any type of signal		5%	
only random signals		5%	
✓ only periodic signals		90%	1

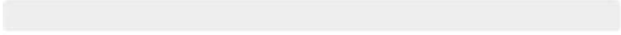
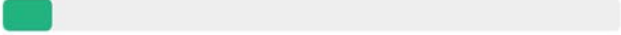

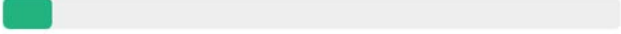
3

## The continuous Fourier transform applies to

✓ any type of signal		83%	1
periodic signals only		6%	
harmonic signals only		11%	
it depends on the type of excitation of the system		0%	


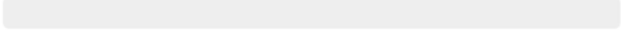
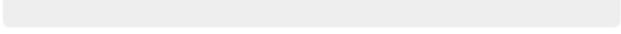
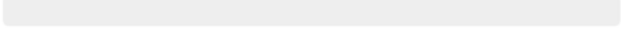
4

## The continuous Fourier transform of a rectangle (pulse) is

a cosine function		0%	
a sine function		8%	
✓ a sinc function		83%	1
a complex function which cannot be computed analytically		8%	

5

## Convolution in the time domain corresponds to

✓ multiplication in the frequency domain		100%	1
convolution in the frequency domain		0%	
deconvolution in the frequency domain		0%	
division in the frequency domain		0%	

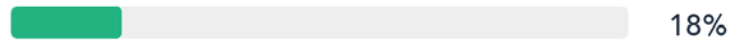
6

## Aliasing happens when

The sampling frequency is too high with respect to the frequency content of the signal

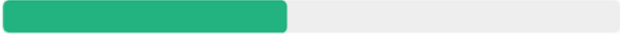
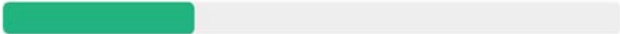



✓ The sampling frequency is too low with respect to the frequency content of the signal



7

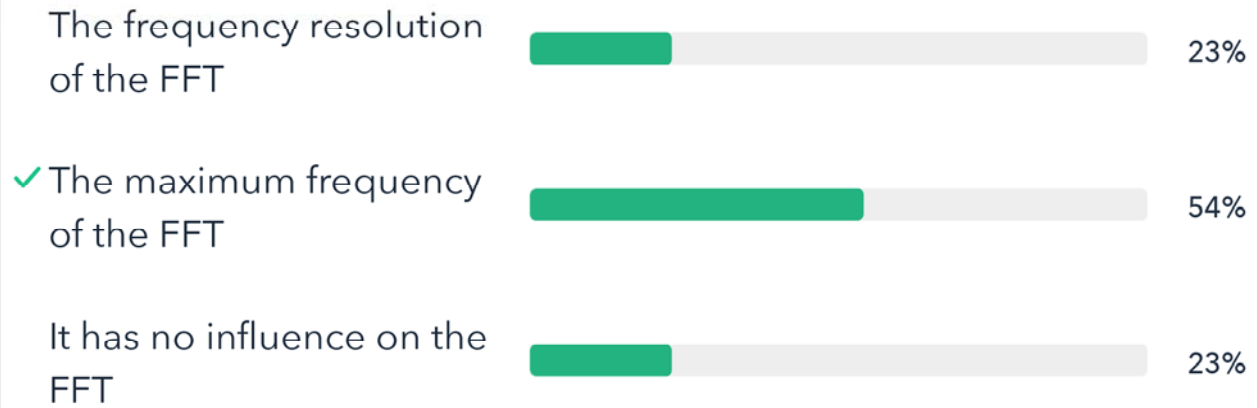
## When using Fast Fourier Transform on sampled signals, you can increase the frequency resolution by

- decreasing the time step of the sampling signal, keeping the total measurement time constant  46%
- increasing the time step of the sampling signal, keeping the total measurement time constant  31%
- ✓ increasing the measurement time, whatever the time step of the sampling signal  23%



8

## When using FFT, the time step of the sample signal has an influence on



9

Suppose the sampling frequency of the accelerometer on your smartphone is 200 Hz. Up to what frequency can you measure acceleration signals ?

