

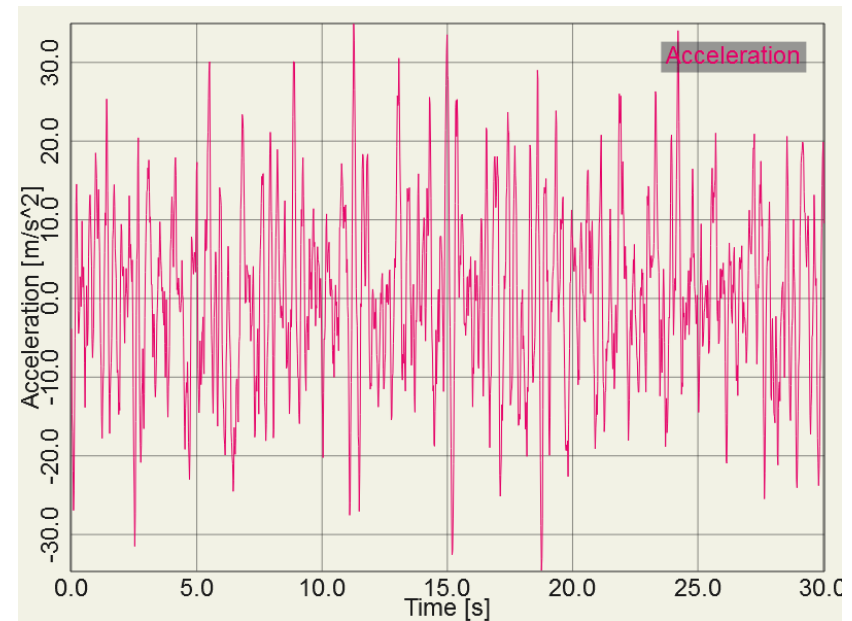
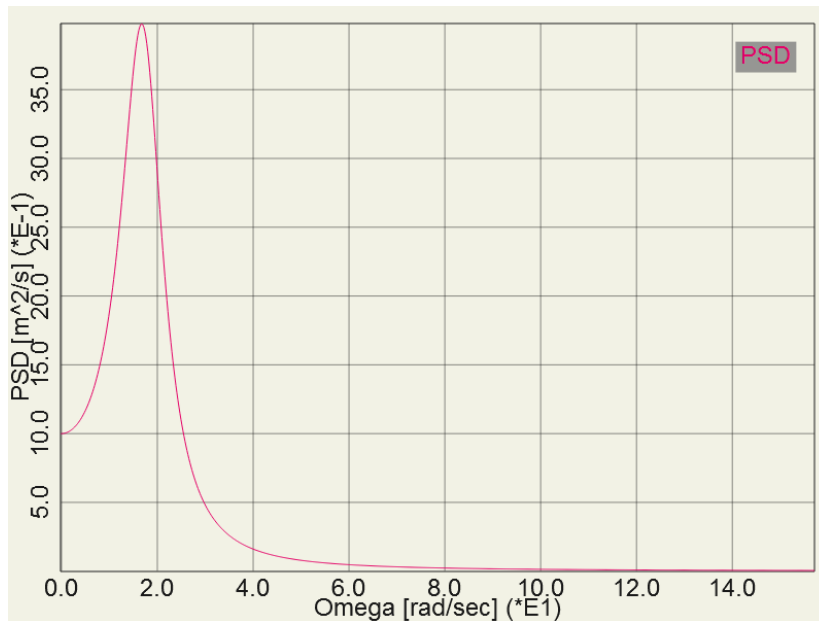
# Basics of stochastic mechanics

## Project „Group B“

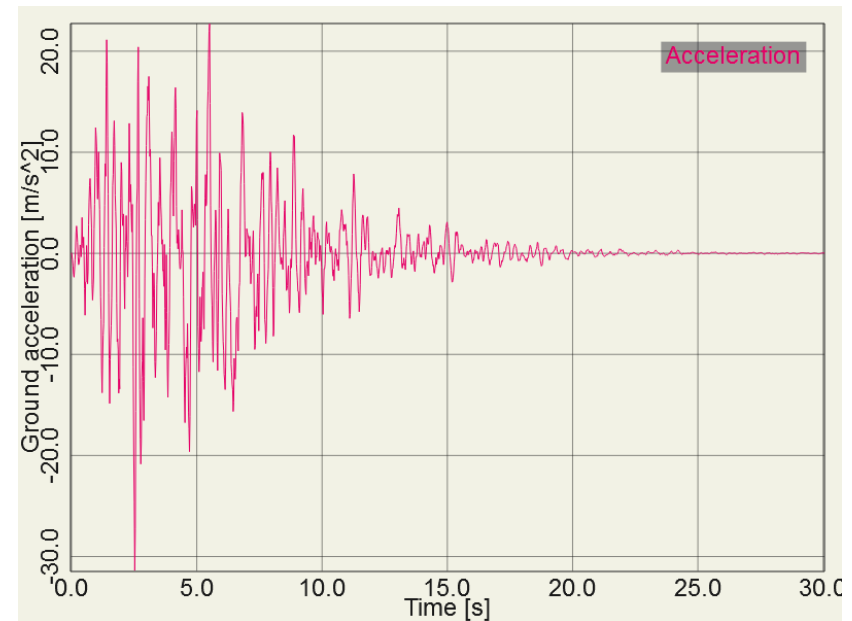
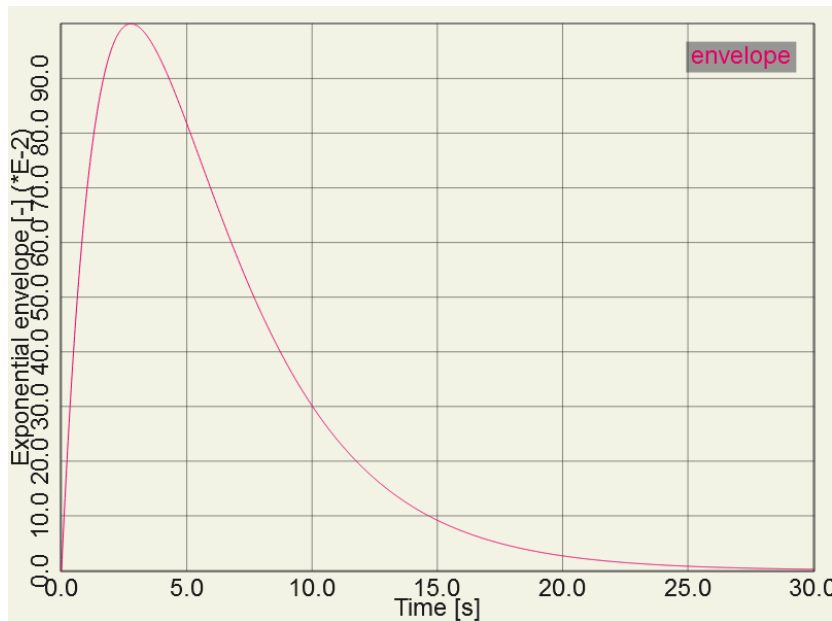
### WS12/13

Prof. Bucher

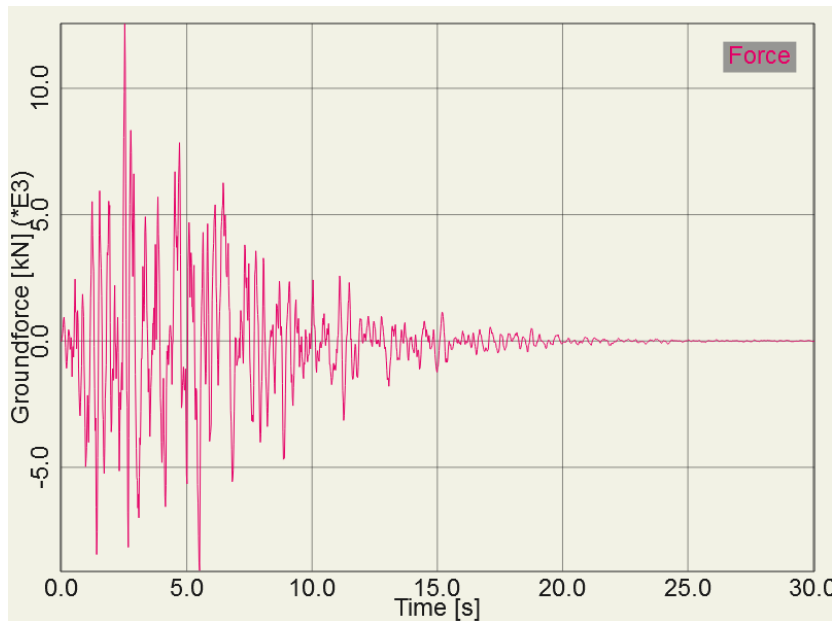
- Power Spectral Density



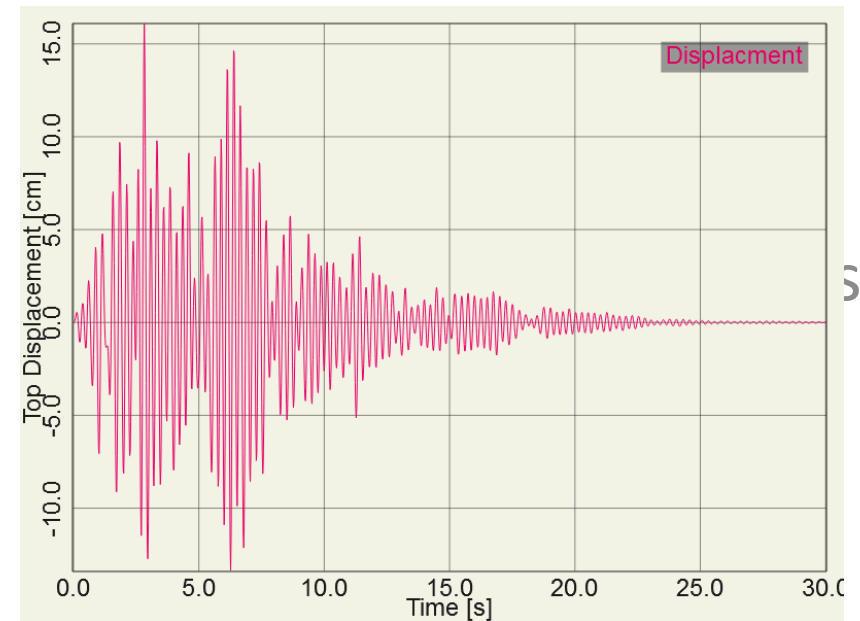
- Filter Function



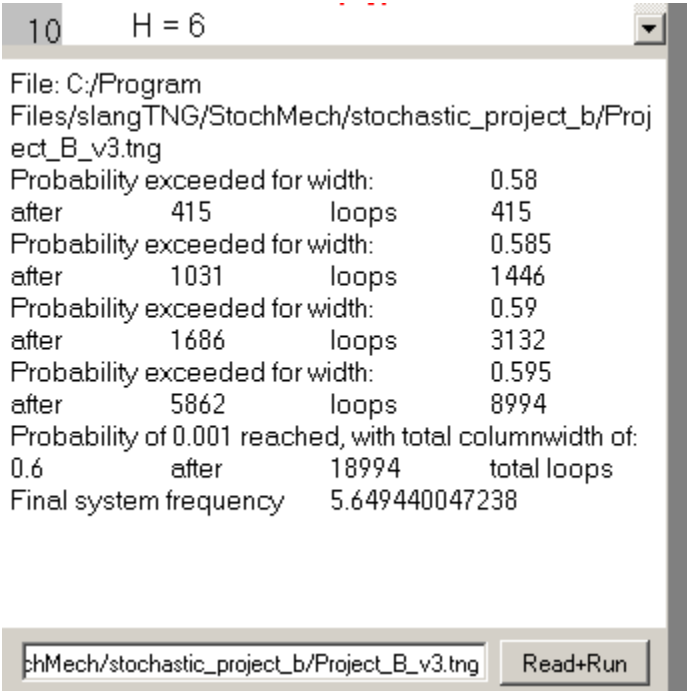
- Groundforce



- Response of the structure



# The Solution:



10 H = 6

File: C:/Program  
Files/slangTNG/StochMech/stochastic\_project\_b/Proj  
ect\_B\_v3.tng

Probability exceeded for width:	0.58
after 415 loops	415
Probability exceeded for width:	0.585
after 1031 loops	1446
Probability exceeded for width:	0.59
after 1686 loops	3132
Probability exceeded for width:	0.595
after 5862 loops	8994
Probability of 0.001 reached, with total columnwidth of:	
0.6 after 18994 total loops	
Final system frequency	5.649440047238

chMech/stochastic\_project\_b/Project\_B\_v3.tng Read+Run

$$H=6 \text{ m}$$

$$M=400 \text{ t}$$

$$\zeta=0.02$$

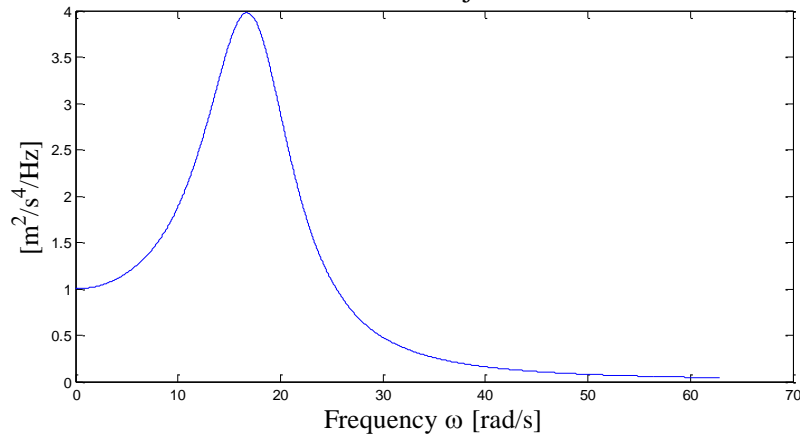
$$S_0=1.0 \text{ m}^2/\text{s}$$

$$\omega_g=1.8 \text{ rad/s}$$

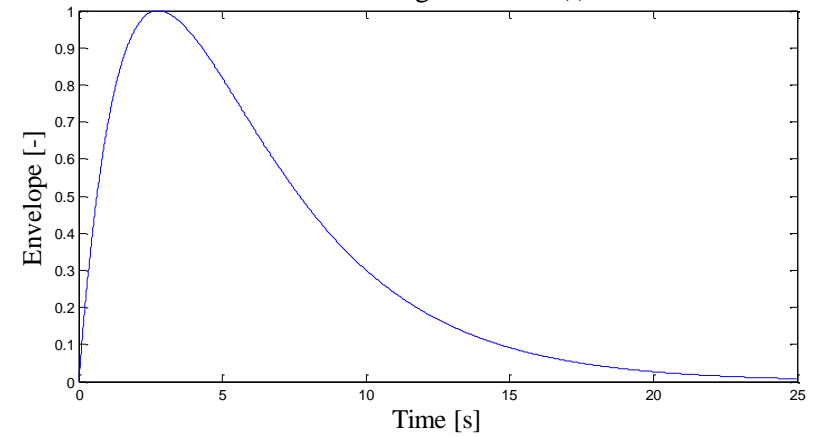
$$\zeta_g=0.3$$

$$\xi=100 \text{ mm}$$

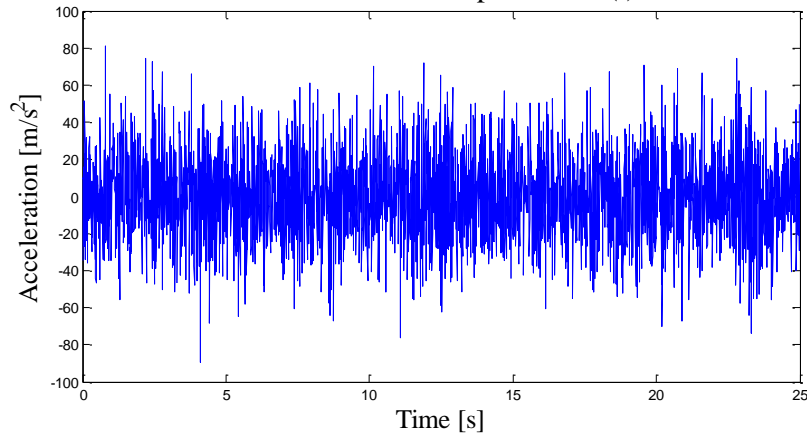
PSD Kanai-Tajimi Filter



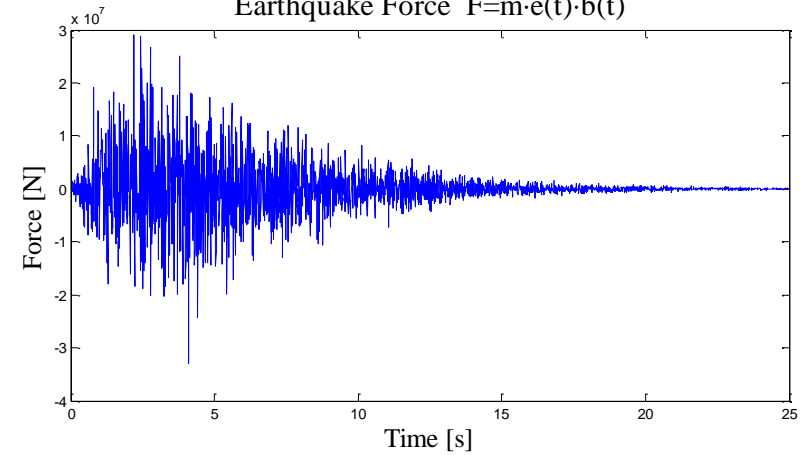
Modulating function  $e(t)$



Inverse FFT from Spectrum  $b(t)$



Earthquake Force  $F=m \cdot e(t) \cdot b(t)$



Time response SDOF

