



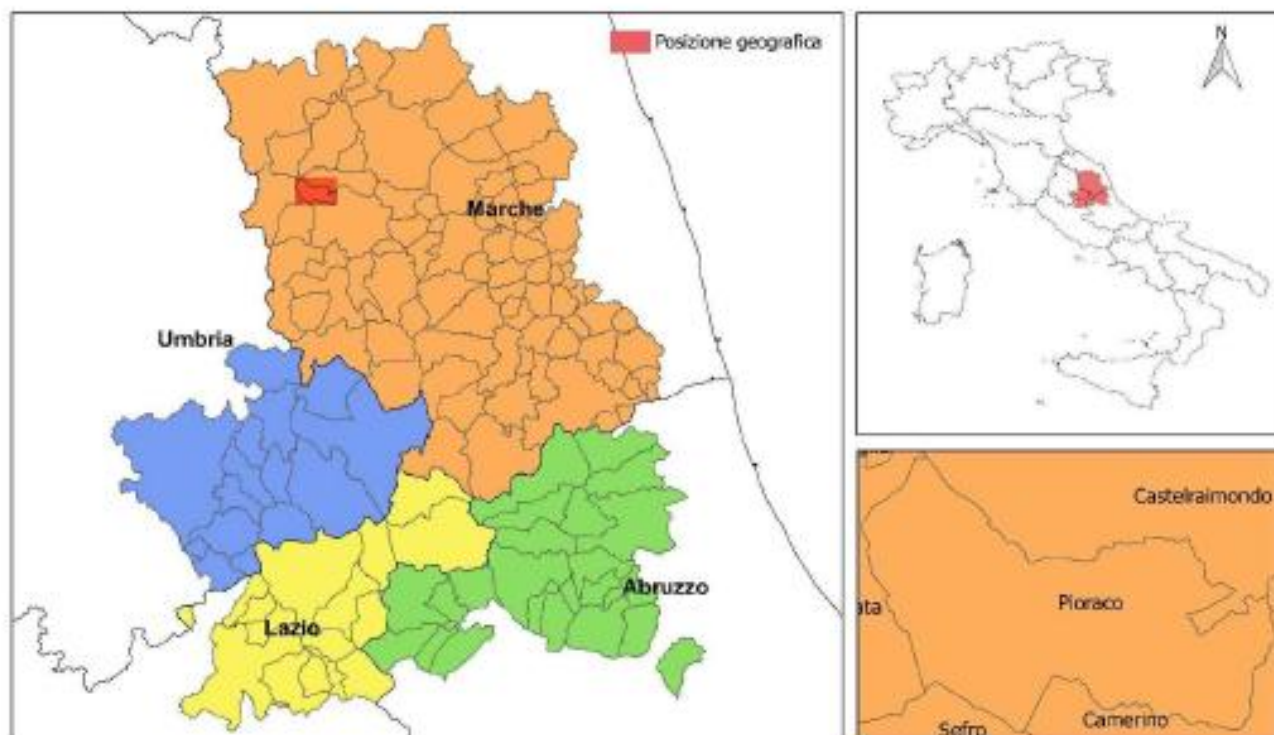
**COMMISSARIO STRAORDINARIO
RICOSTRUZIONE SISMA - 2016**

Microzonazione Sismica di Livello 3 del Comune di Pioraco ai sensi
dell'Ordinanza del Commissario Straordinario n. 24 registrata
il 15 maggio 2017 al n. 1065

MICROZONAZIONE SISMICA

Relazione Sintetica di Modellazione

Regione Marche Comune di Pioraco



Soggetto realizzatore
ATP
Geol. Silvia Paggi
Geol. Eugenio Pistolesi
Geol. Dimitri Mazza
Geol. Angelo Curatolo
Ing. Roberto Di Girolamo

Data e revisione

CENTROMS
CENTRO PER LA
MICROZONAZIONE SISMICA
E LE SUE APPLICAZIONI

1. MOPS 2001

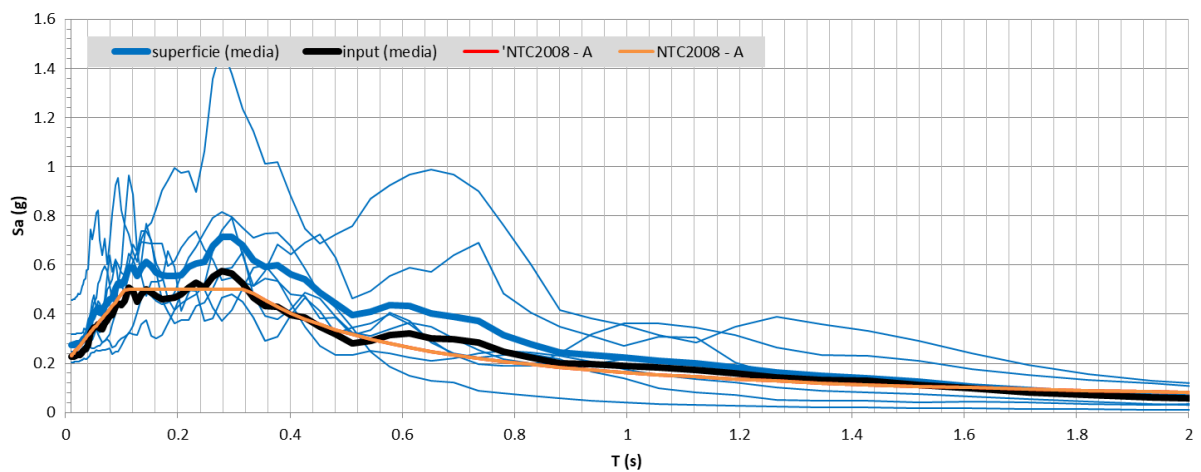
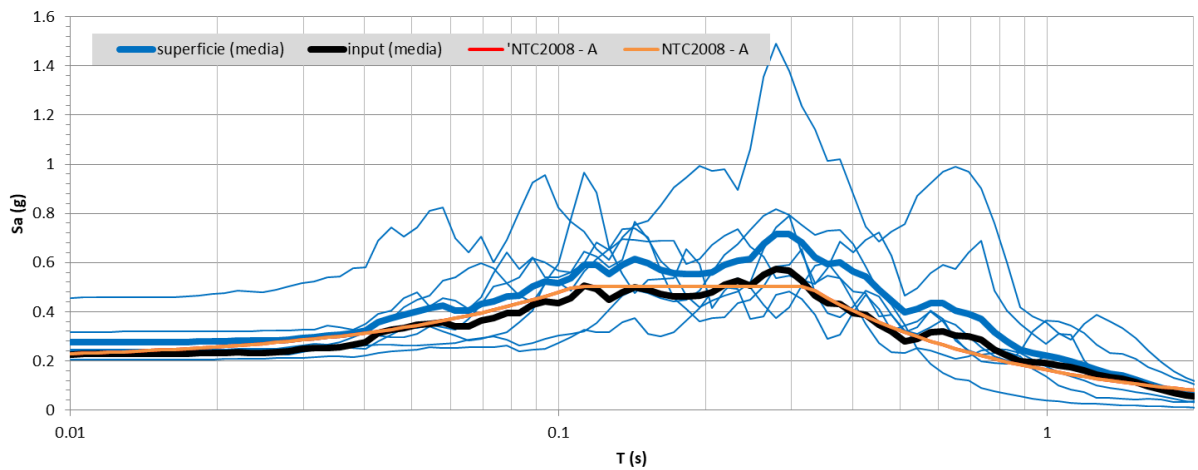
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.28	1.36	1.24
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.27	1.28	1.30
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.33	1.36	1.39
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.19	1.24	1.29

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

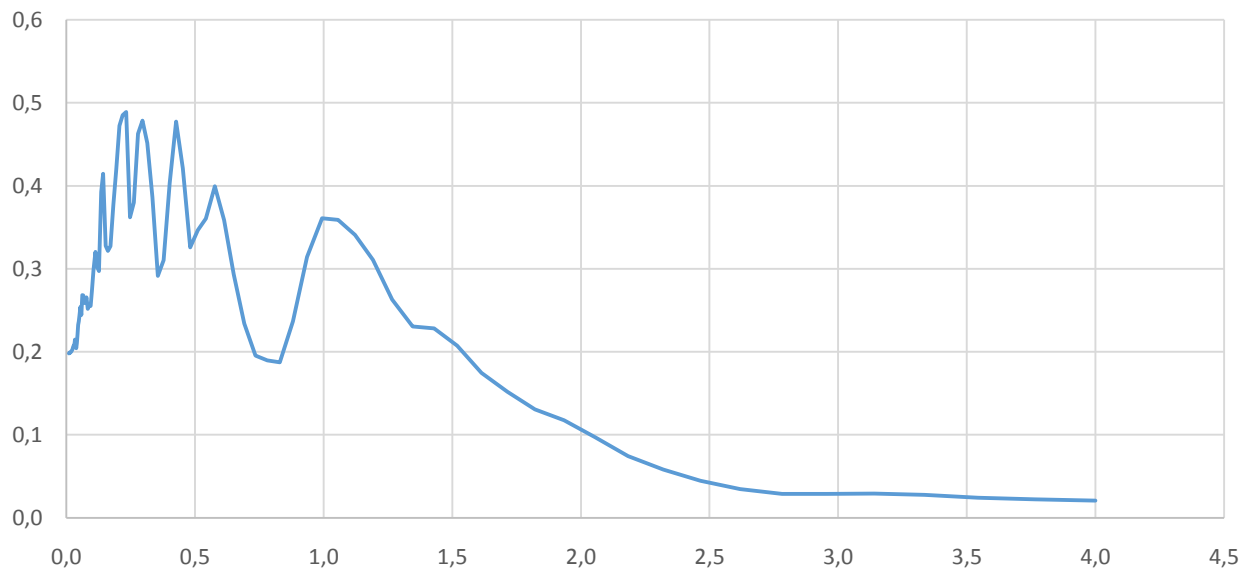
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

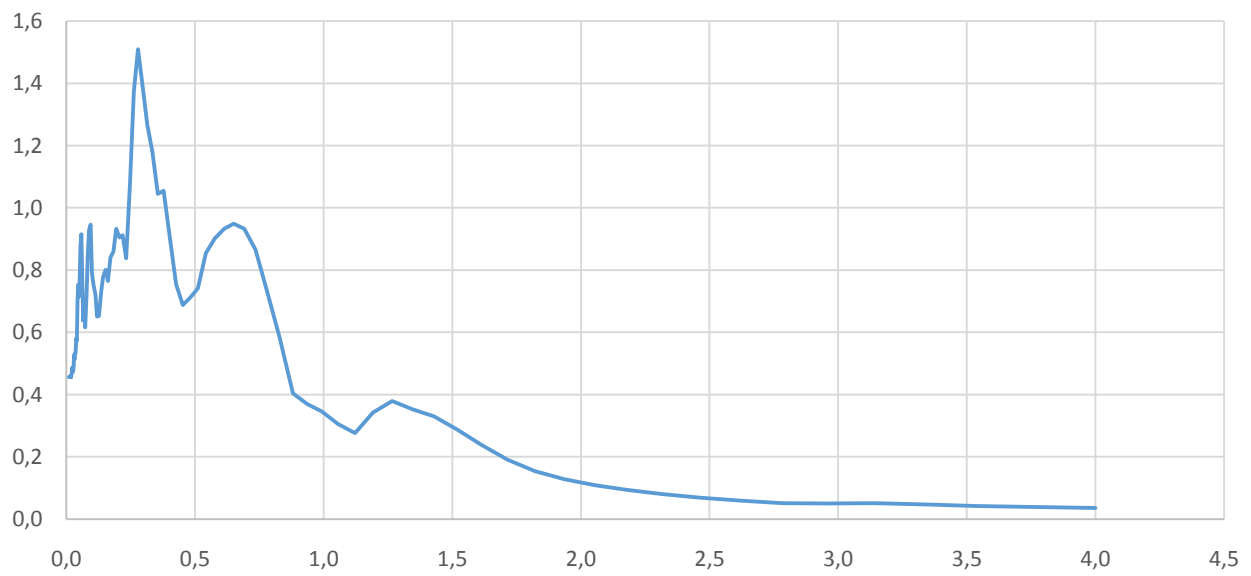
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



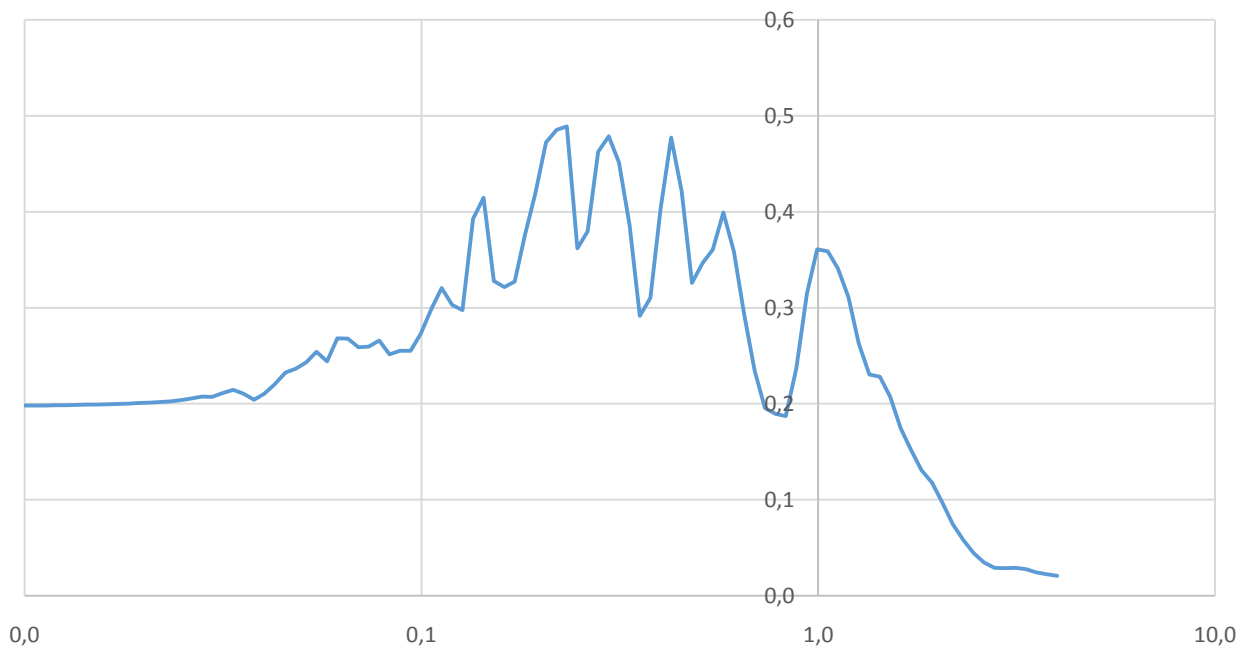
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 694



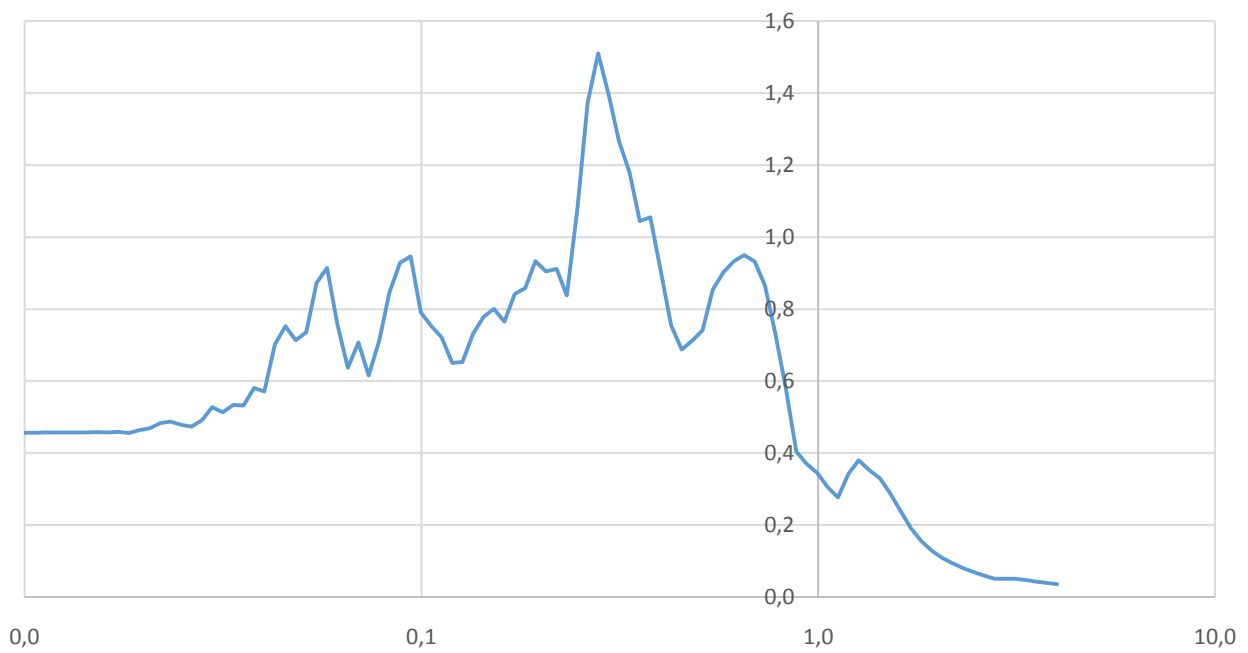
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 450



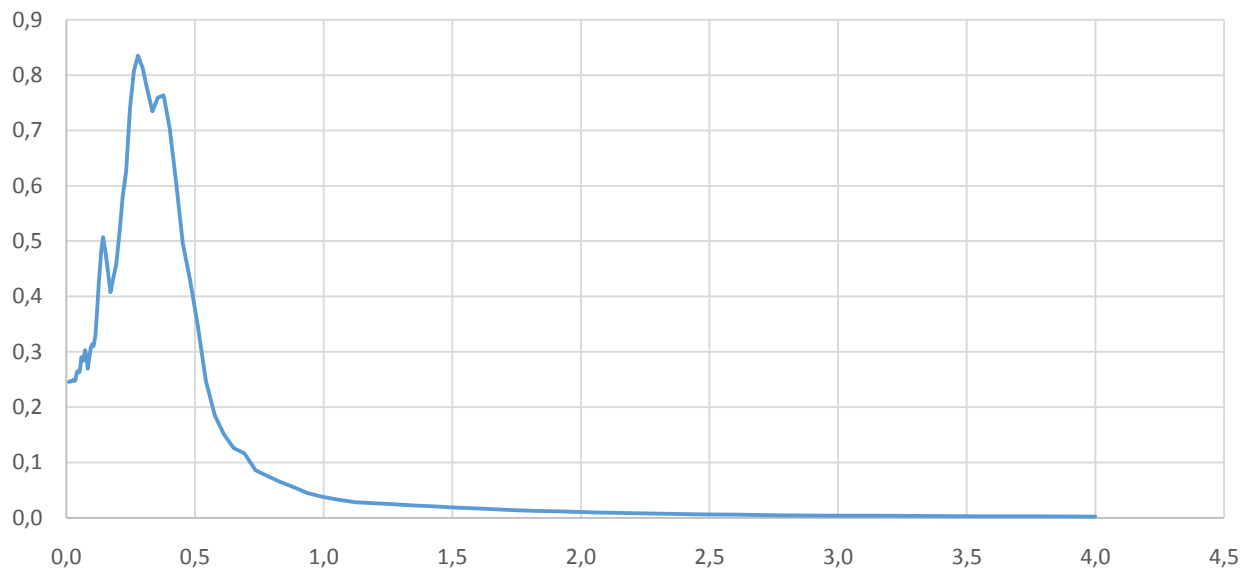
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 694



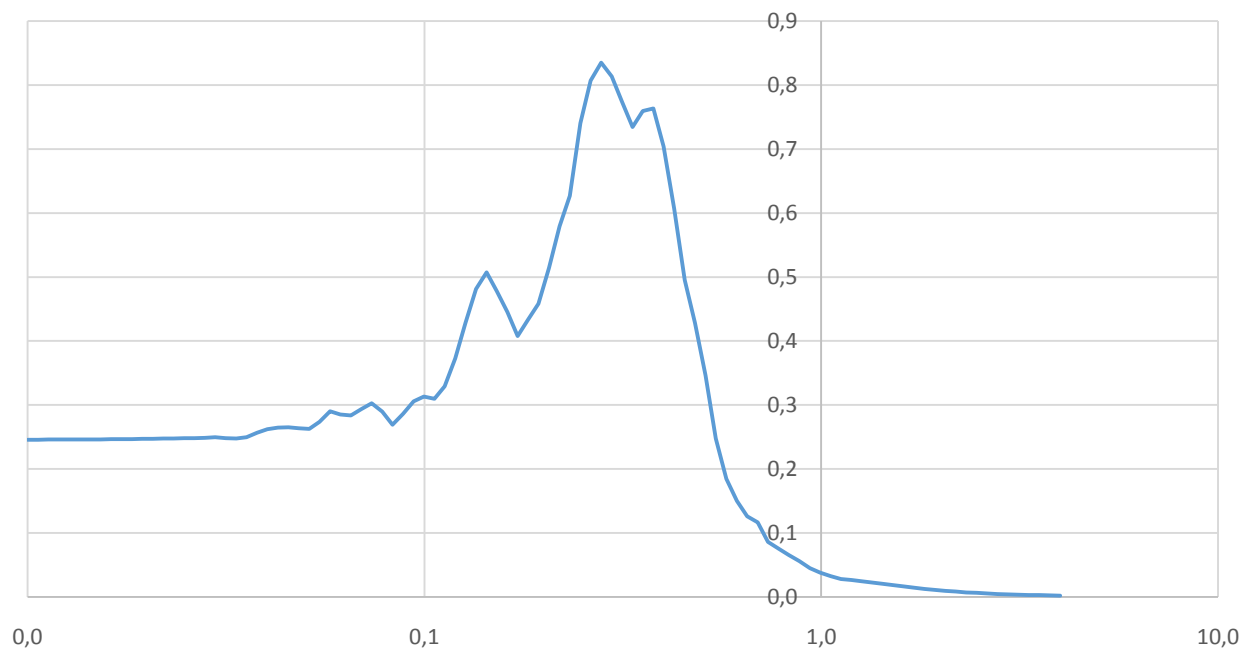
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 450



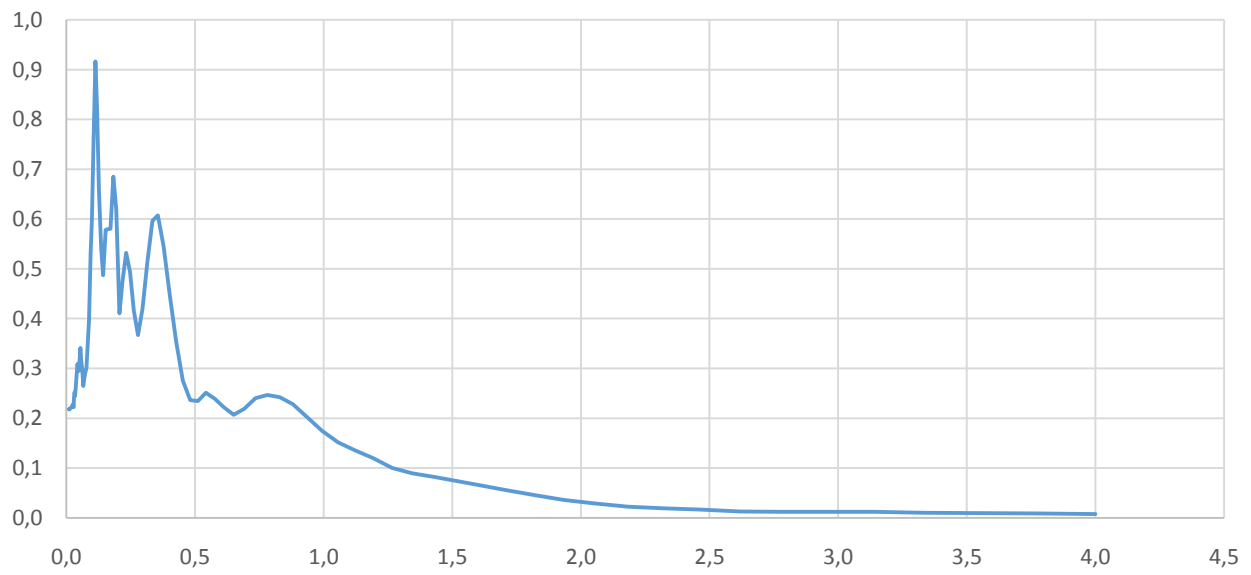
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 451



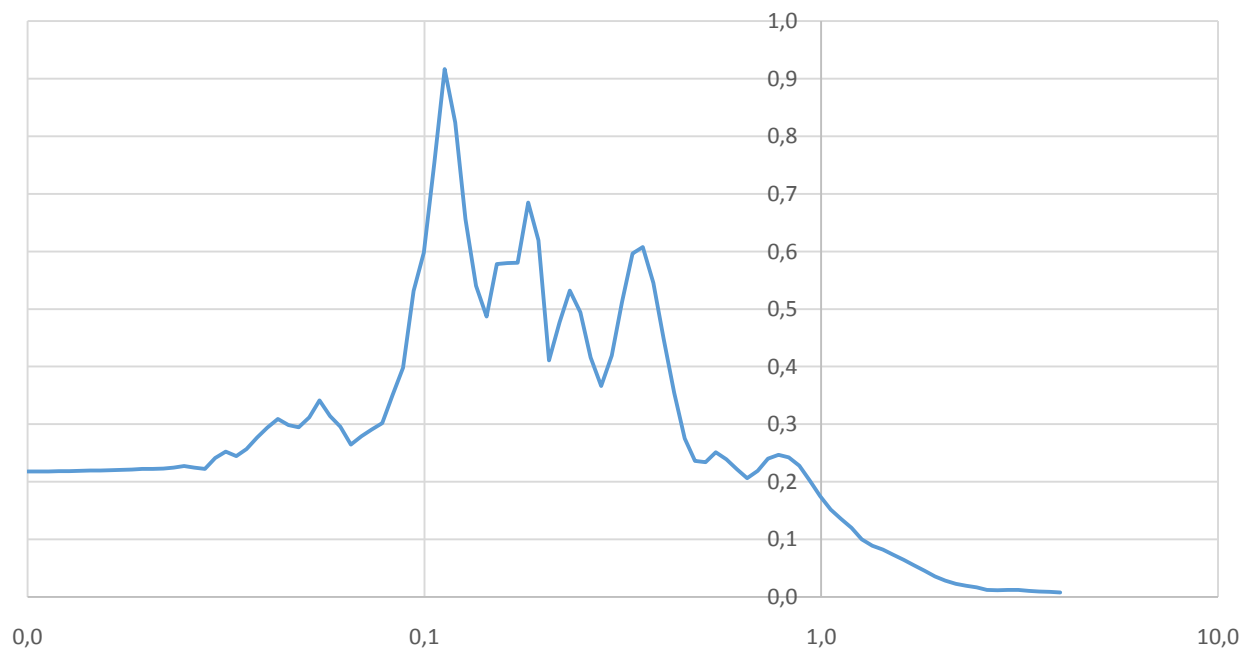
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 451



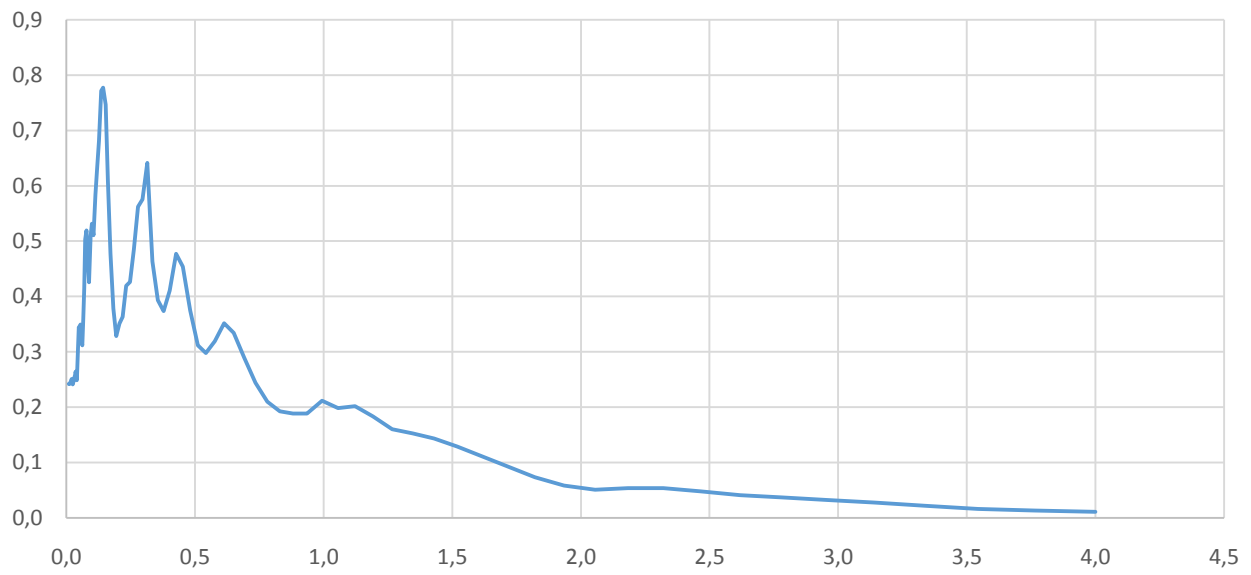
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 697



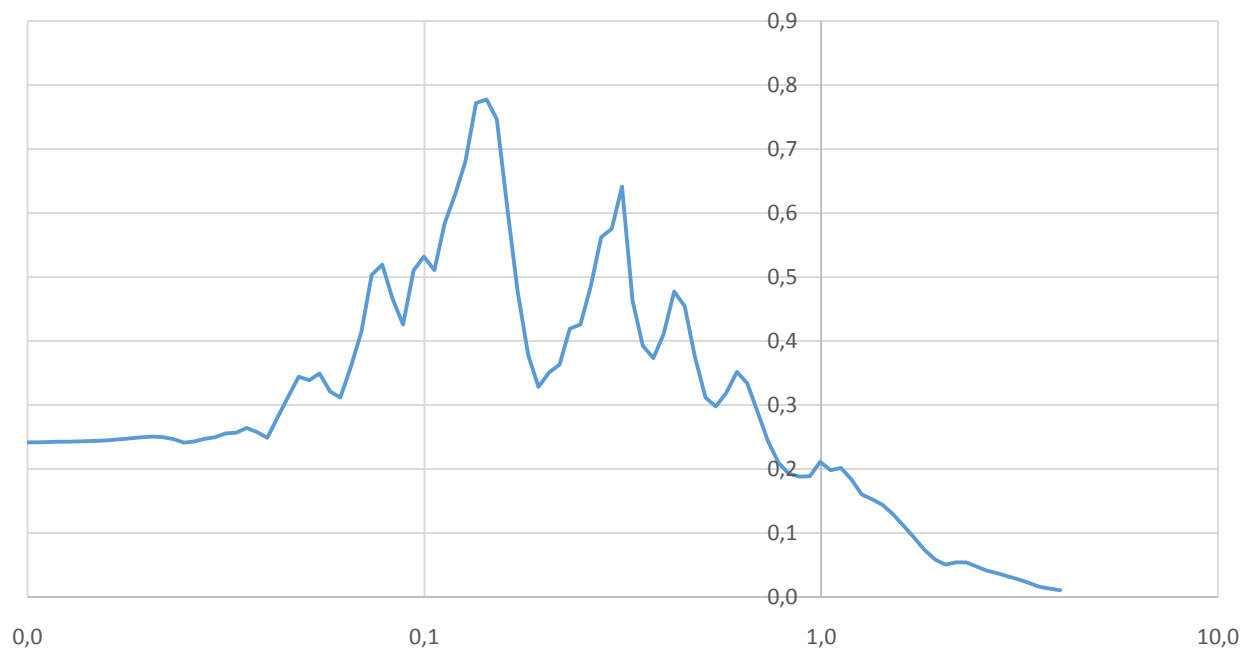
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 697



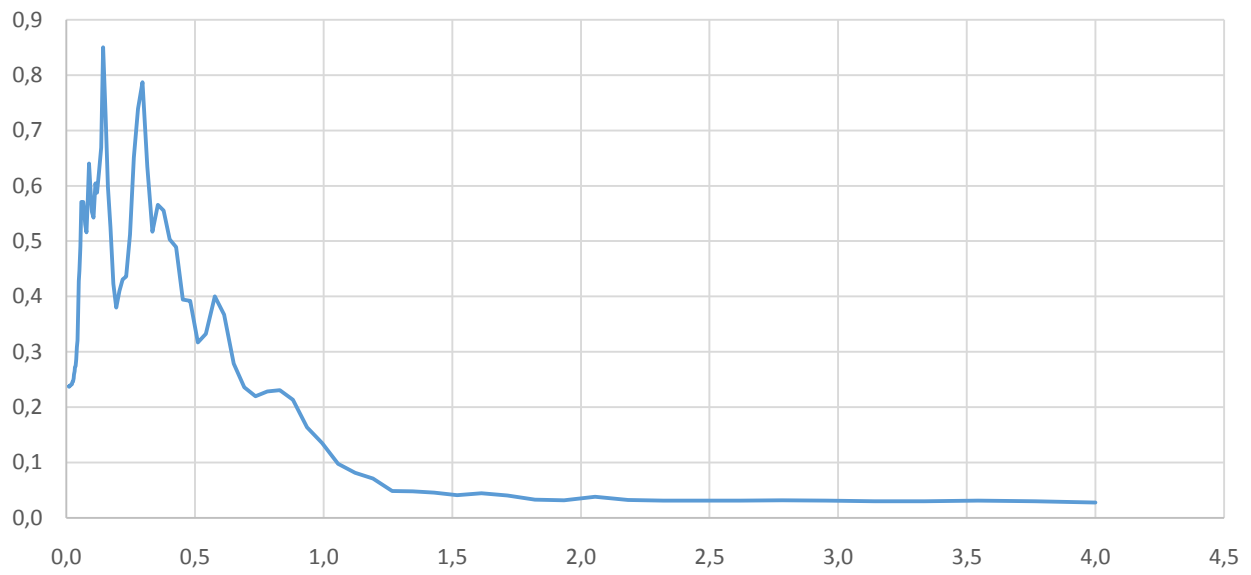
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 607



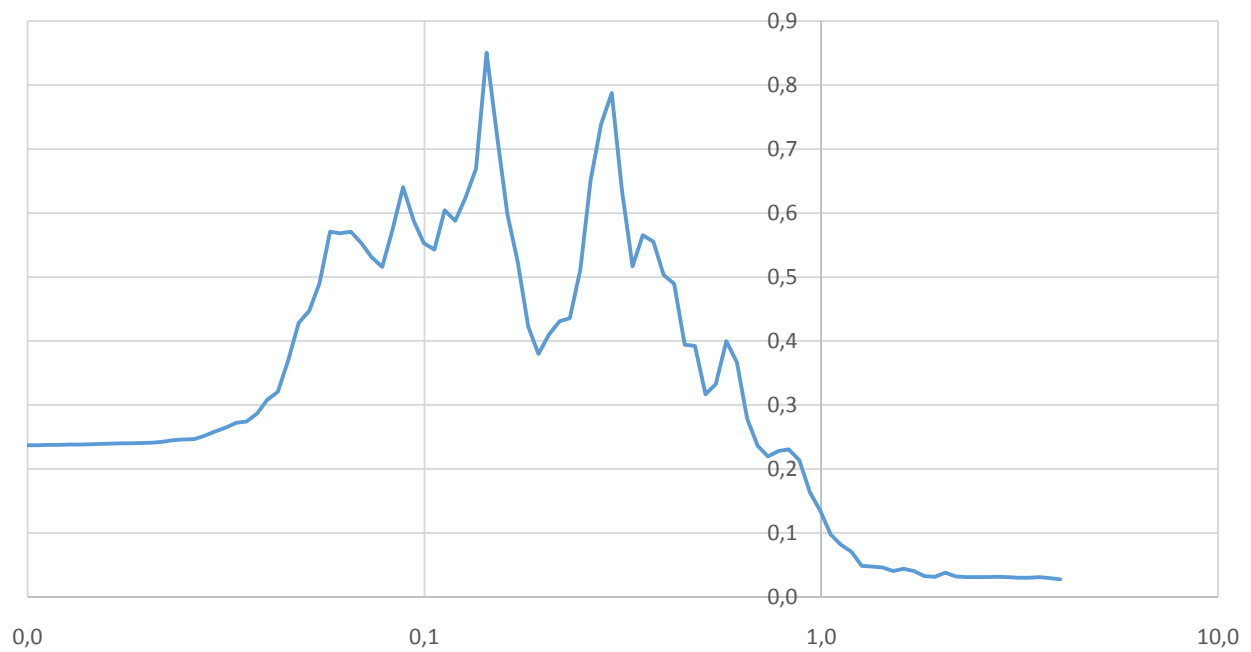
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 607



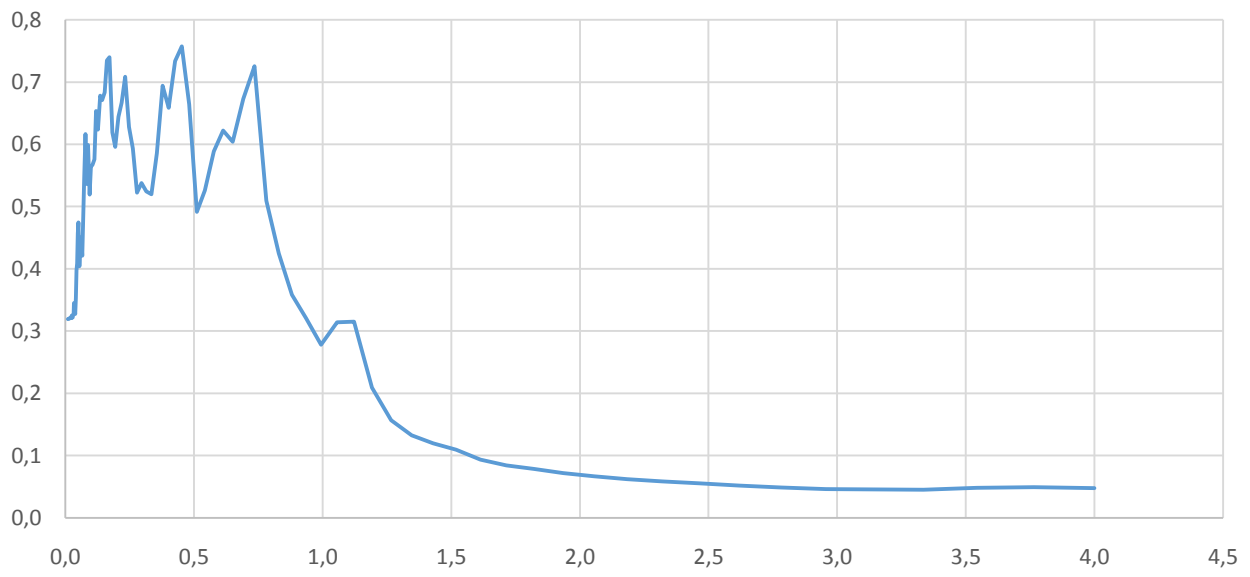
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 300



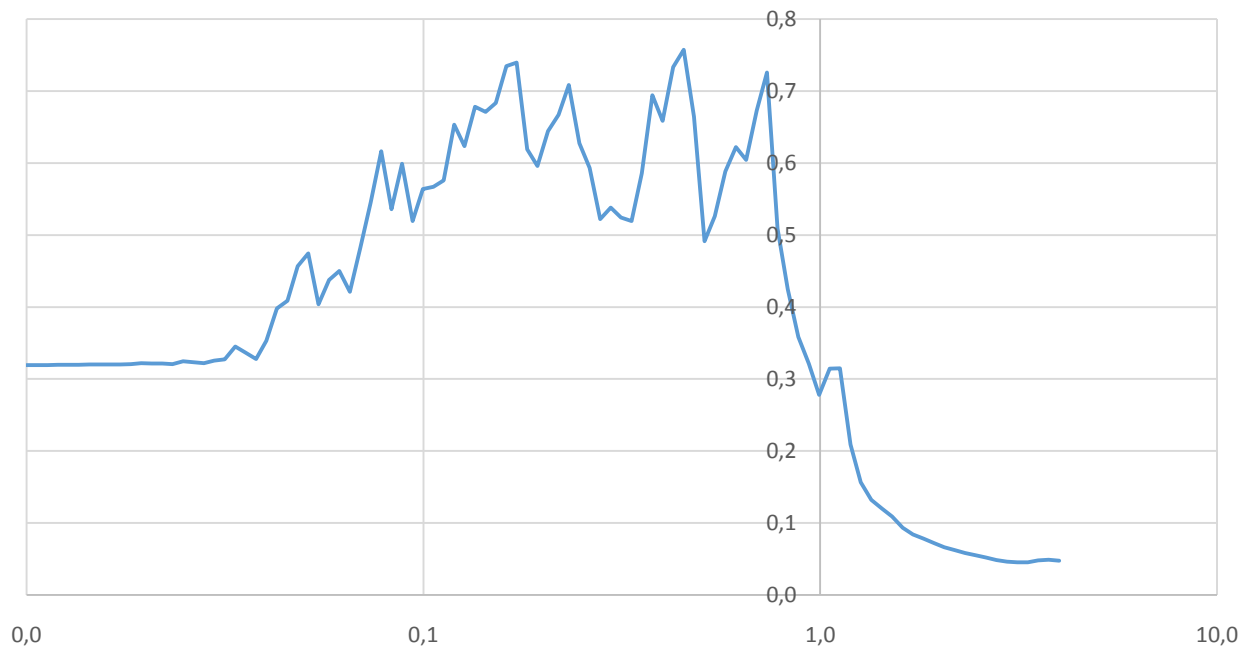
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 300



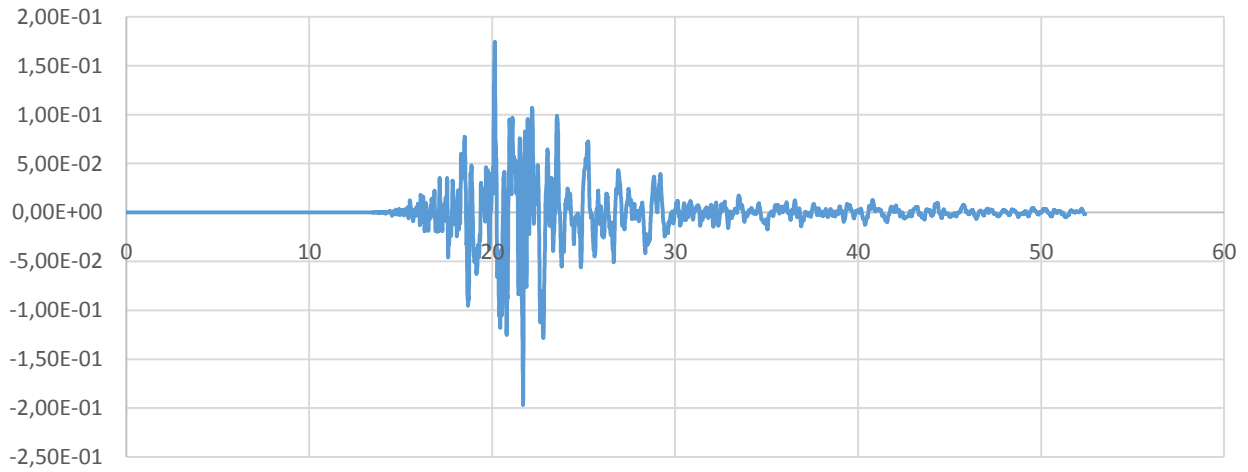
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 497



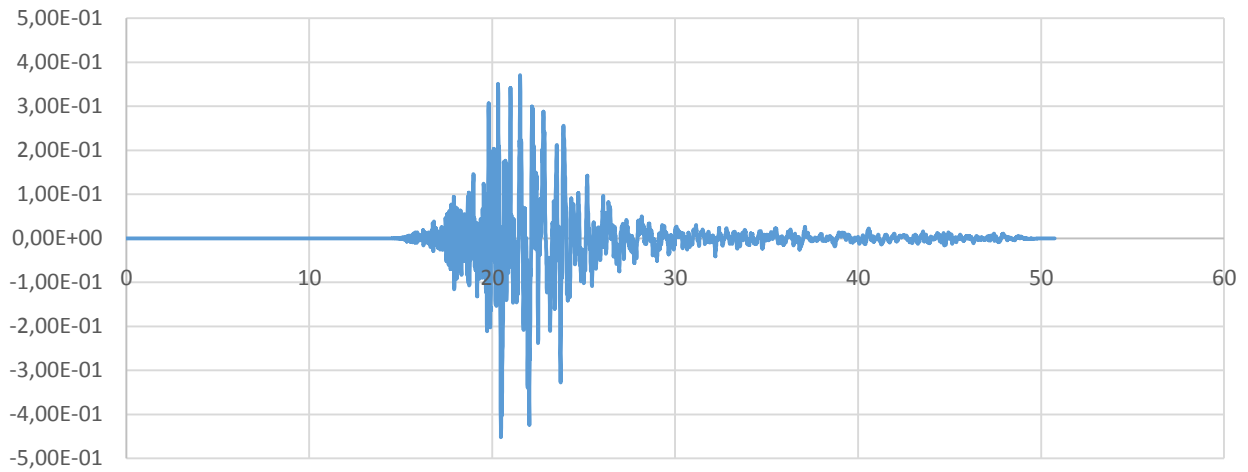
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 497



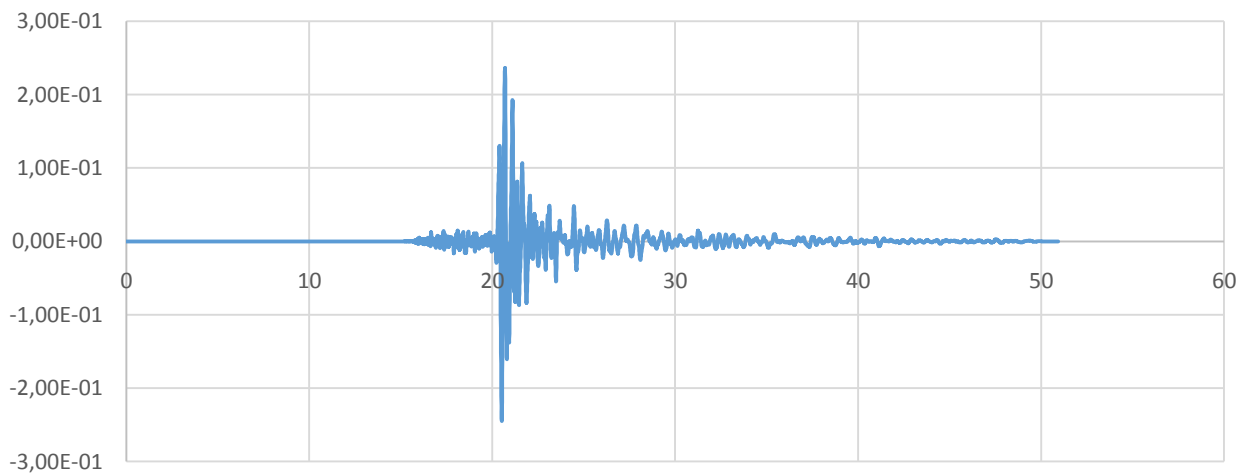
ACCELEROGRAMMA 1 / SCENARIO 694



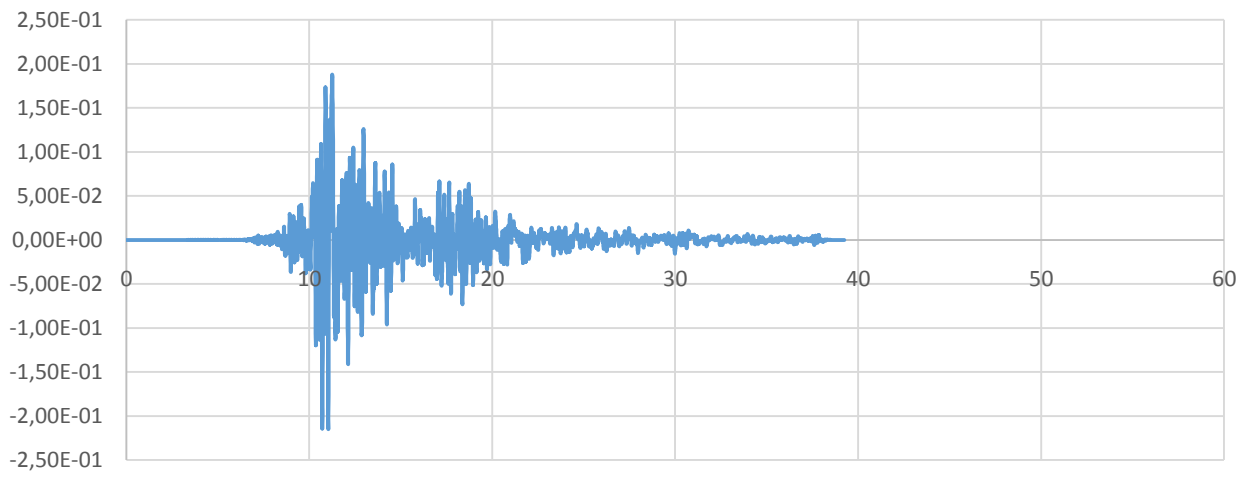
ACCELEROGRAMMA 2 / SCENARIO 450



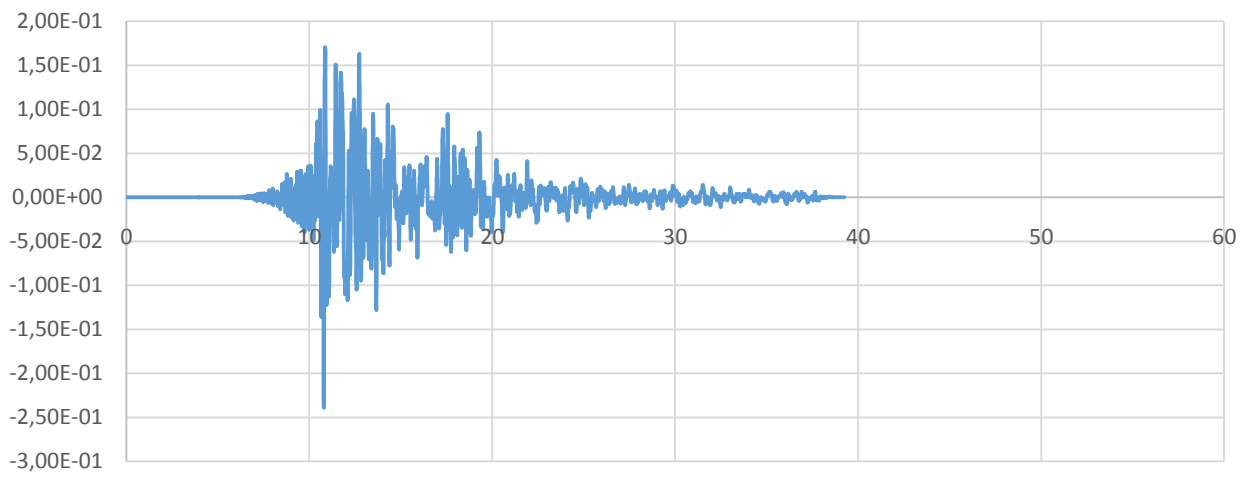
ACCELEROGRAMMA 3 / SCENARIO 451



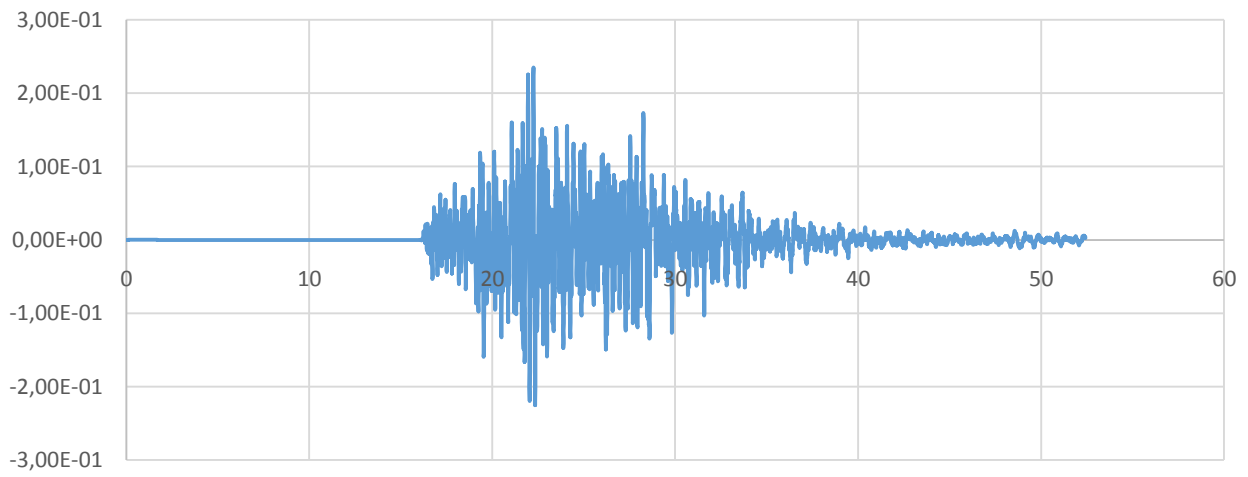
ACCELEROGRAMMA 4 / SCENARIO 697



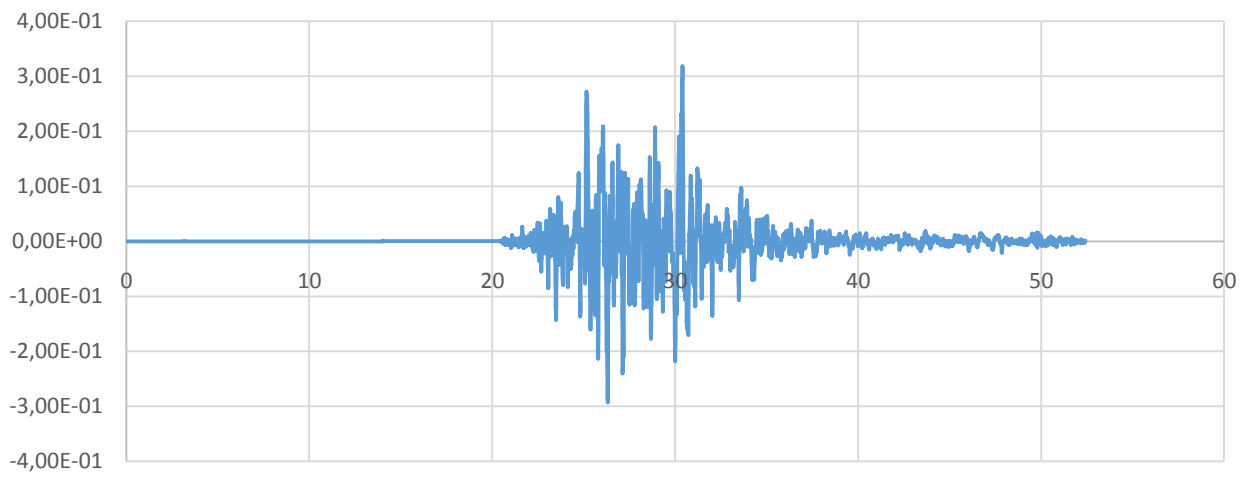
ACCELEROGRAMMA 5 / SCENARIO 607



ACCELEROGRAMMA 6 / SCENARIO 300



ACCELEROGRAMMA 7 / SCENARIO 497



2. MOPS 2002

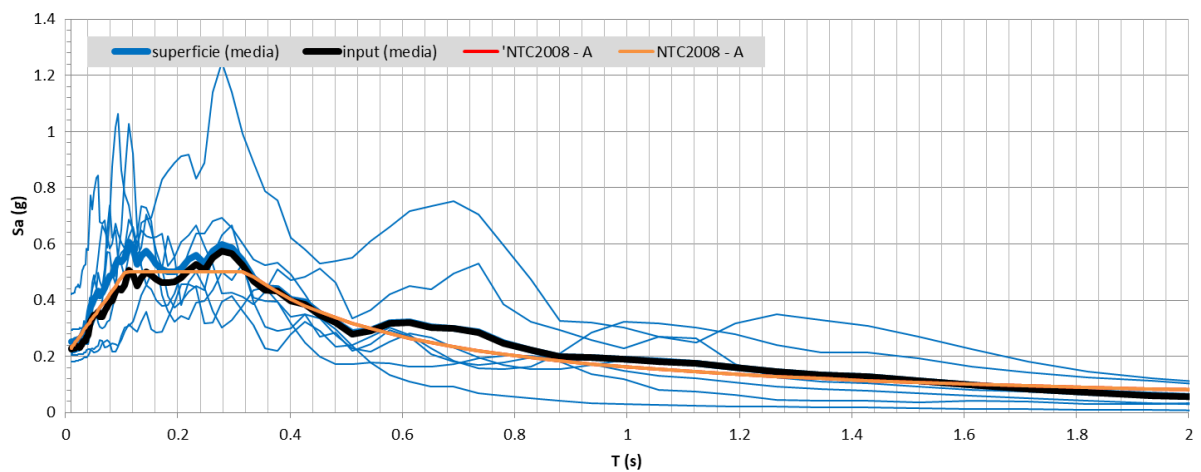
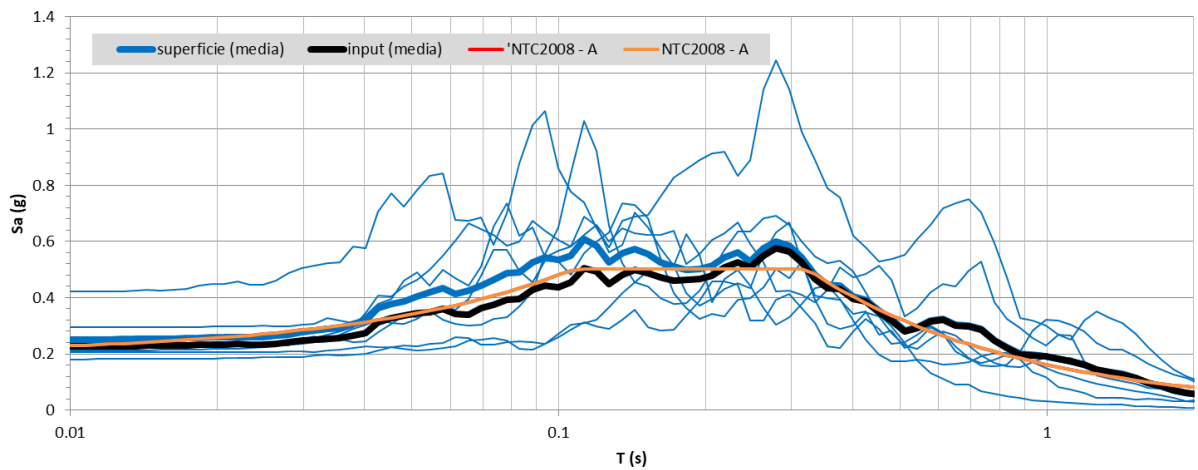
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.06	1.01	1.01
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.05	1.06	1.07
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.01	1.01	1.01
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.00	1.01	1.01

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

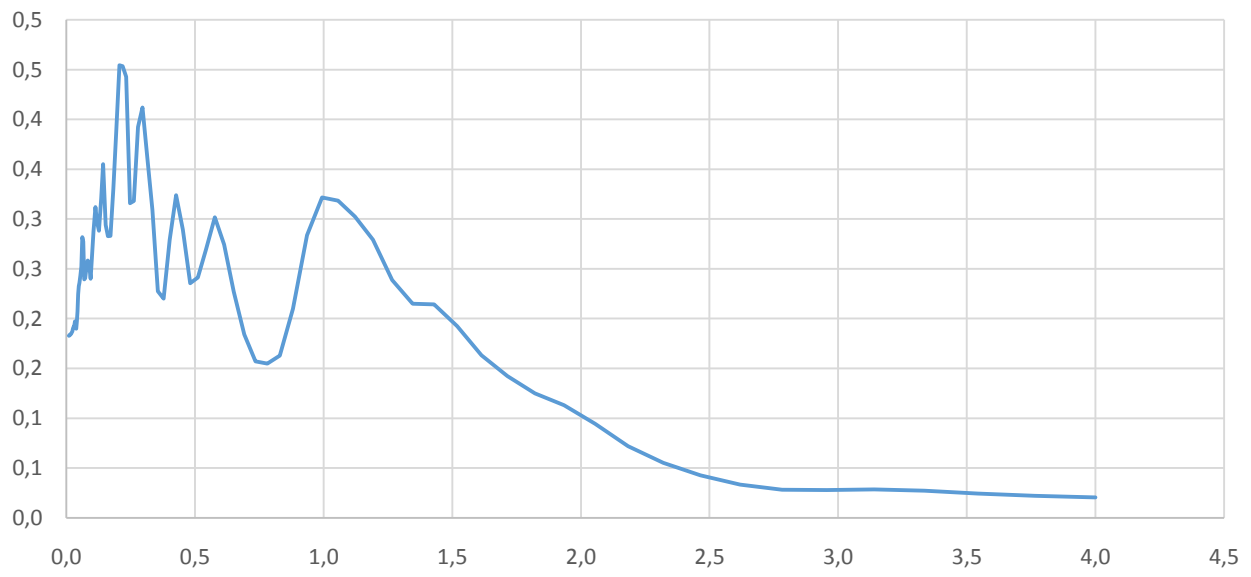
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

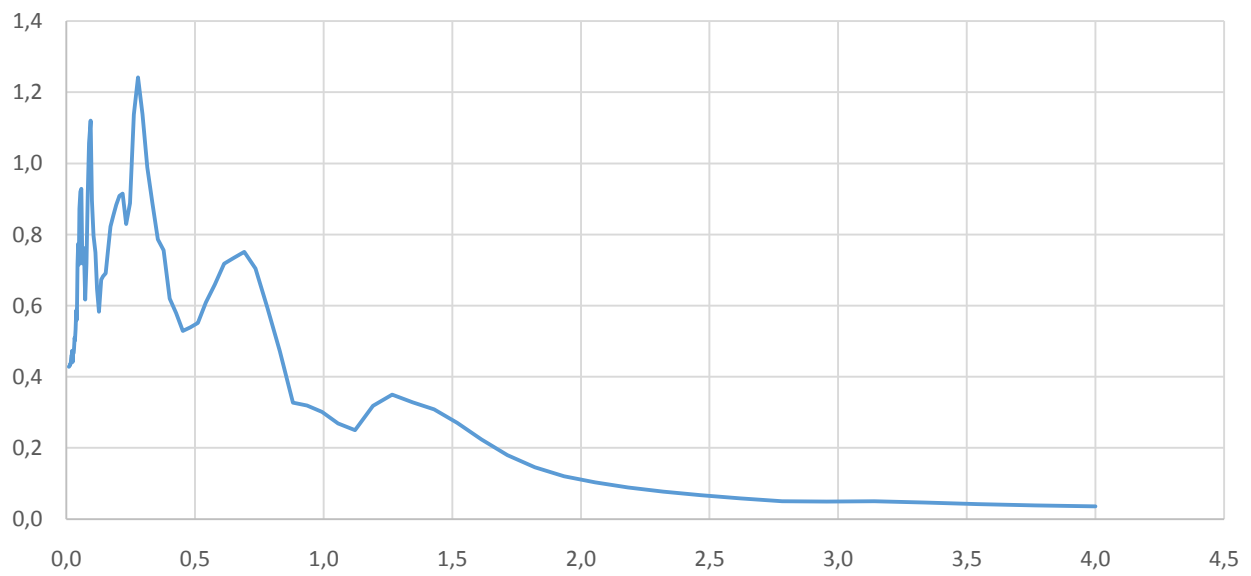
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



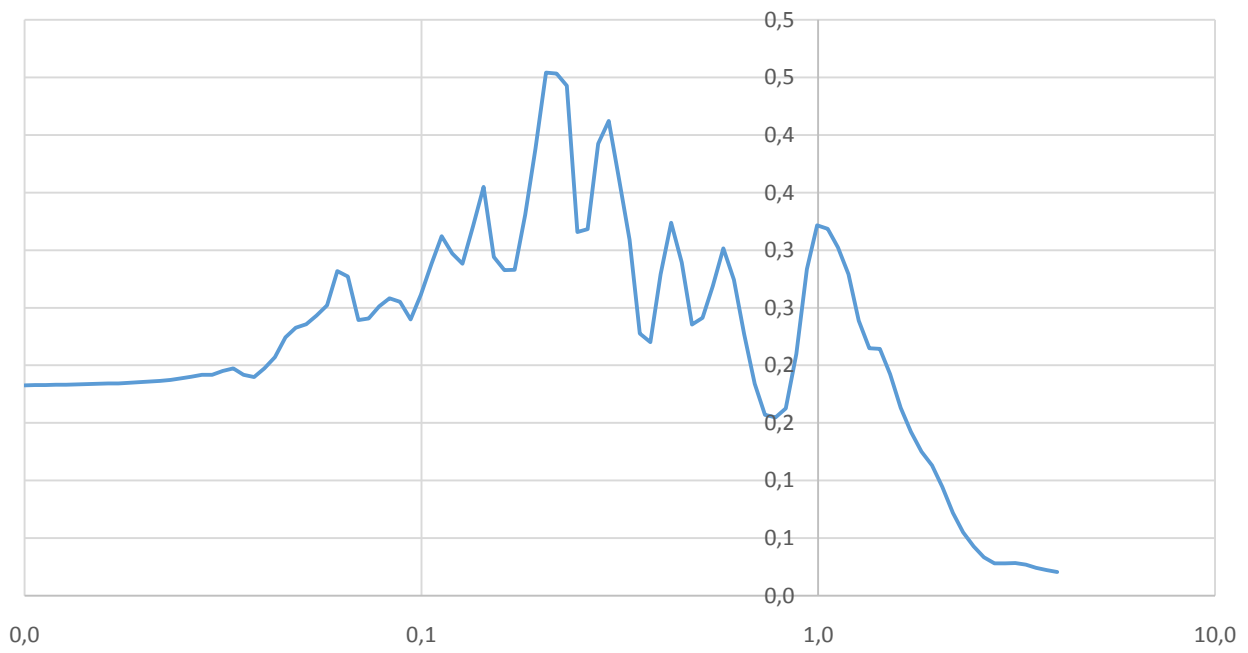
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 288



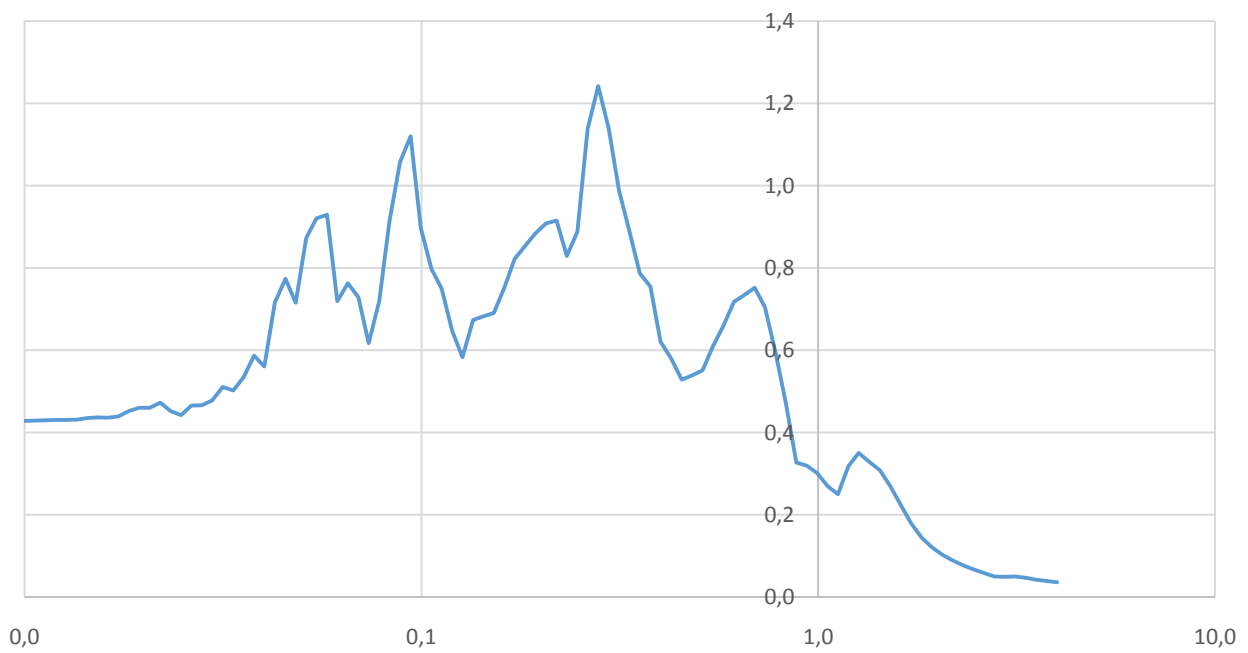
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 289



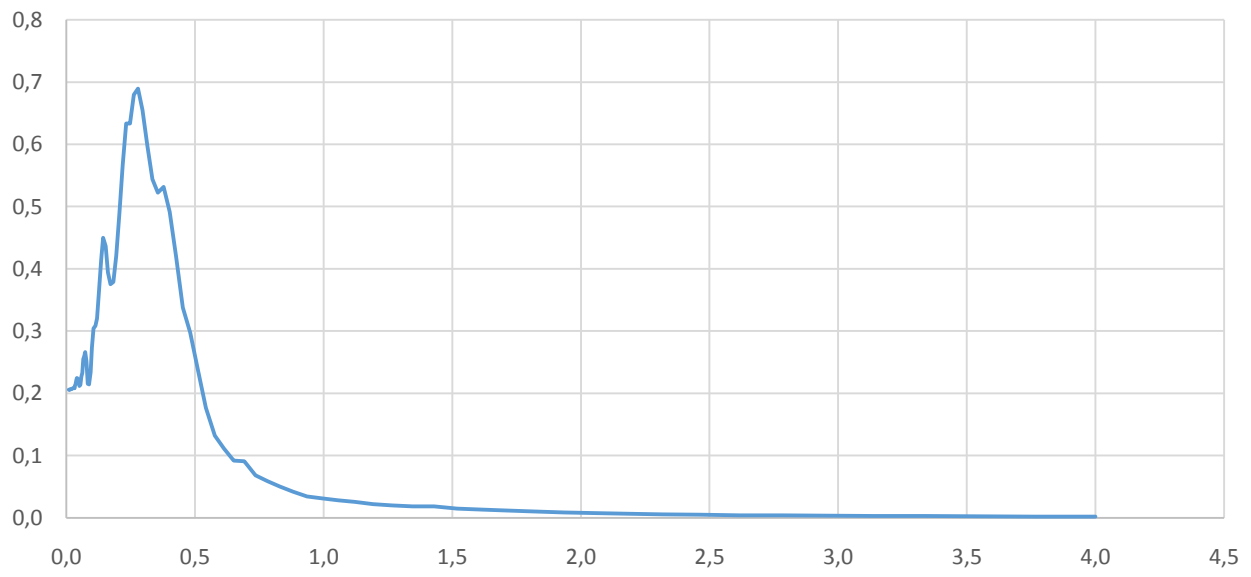
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 288



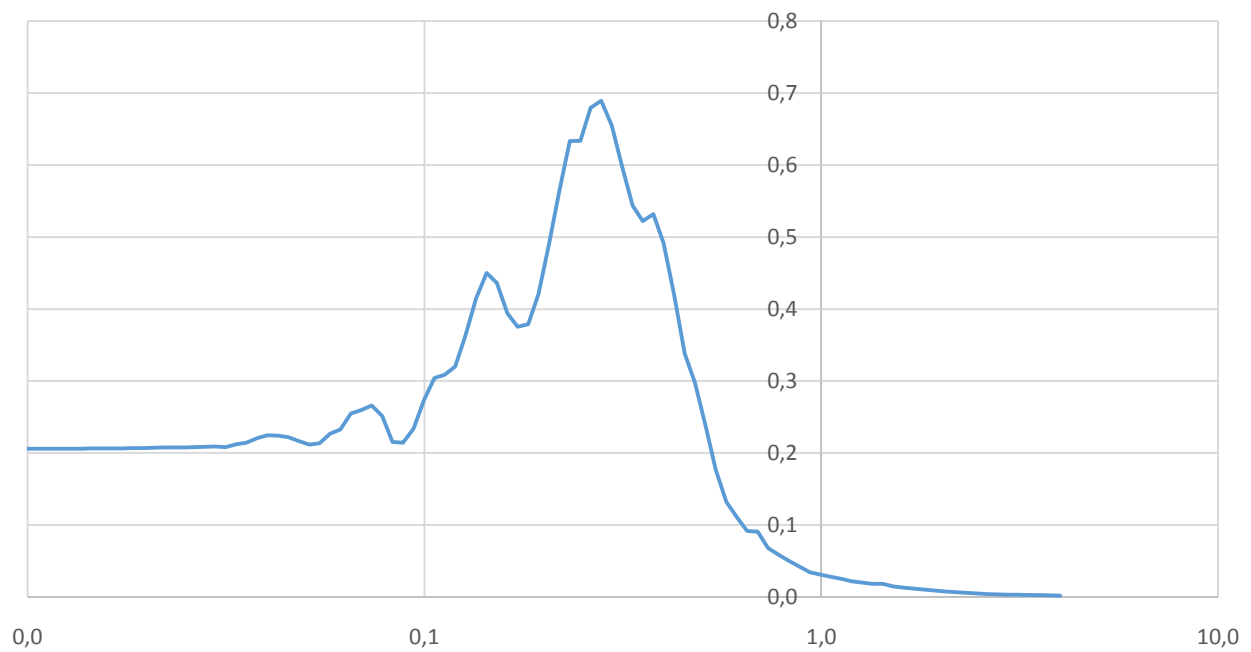
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 289



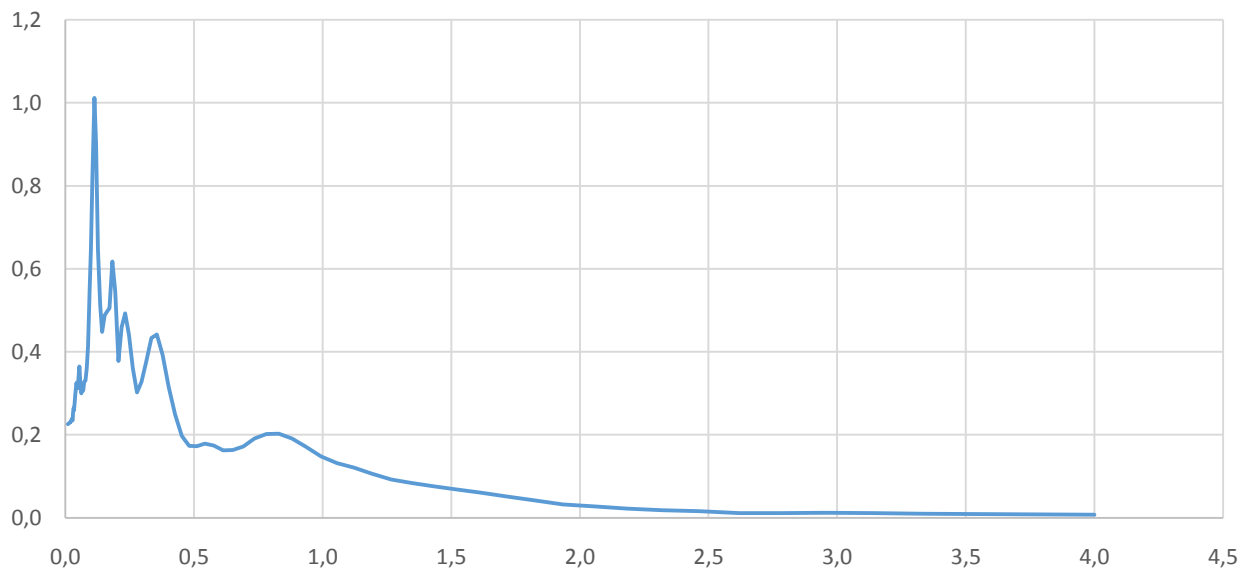
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 290



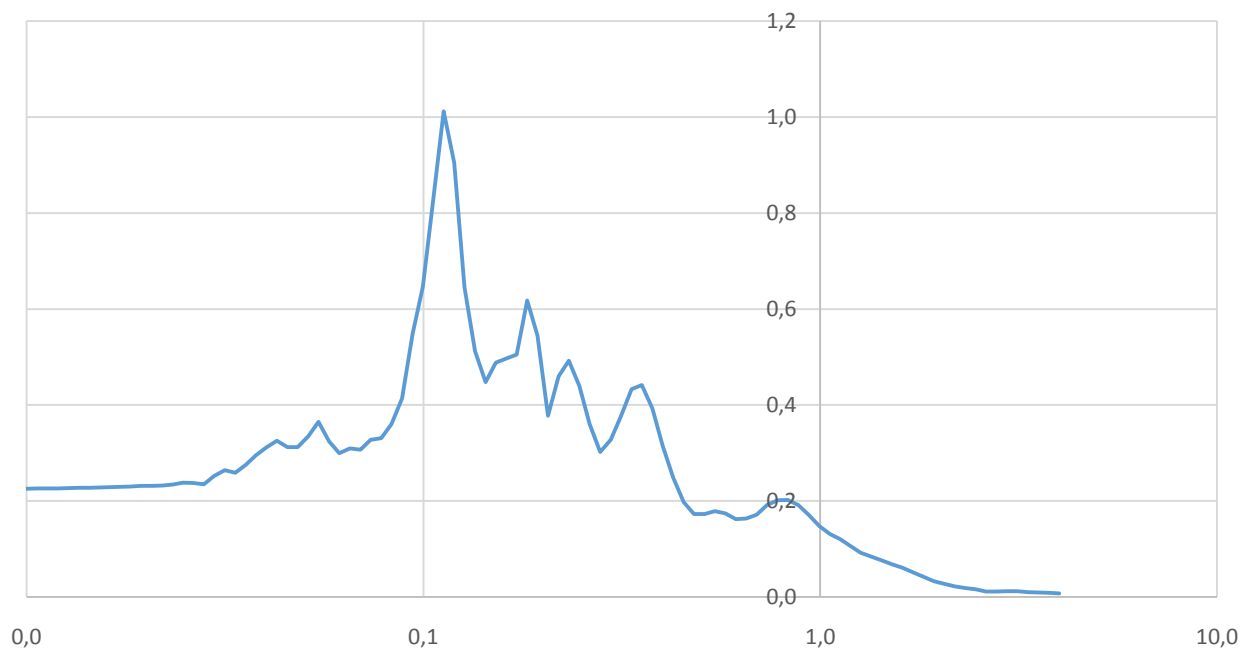
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 290



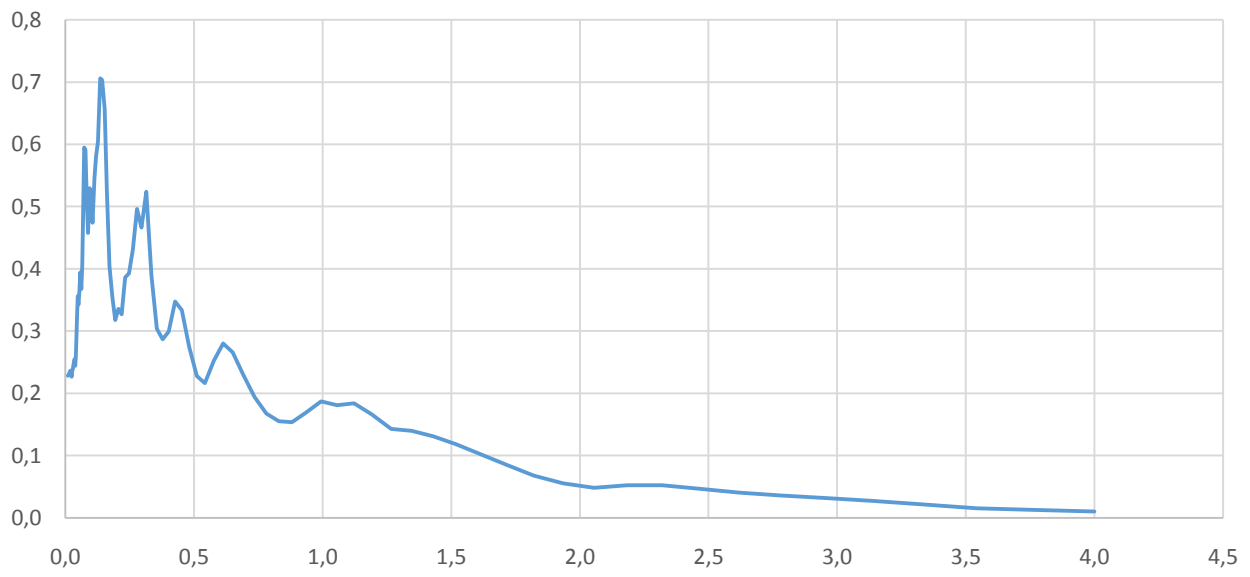
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 690



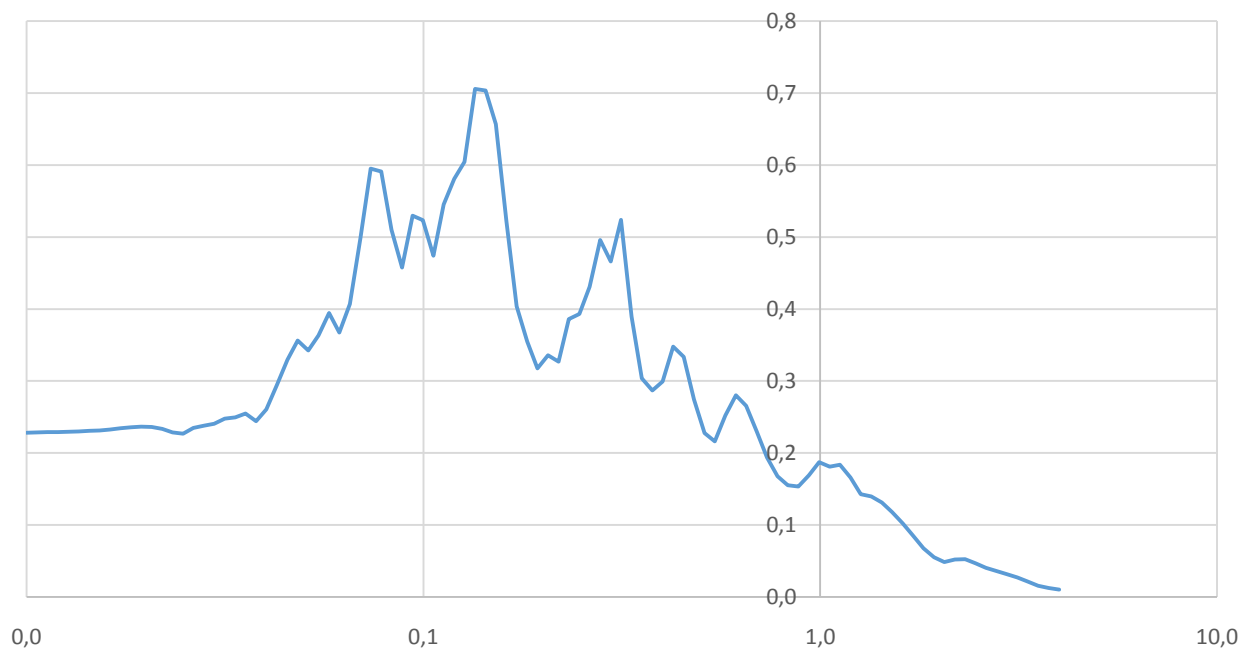
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 690



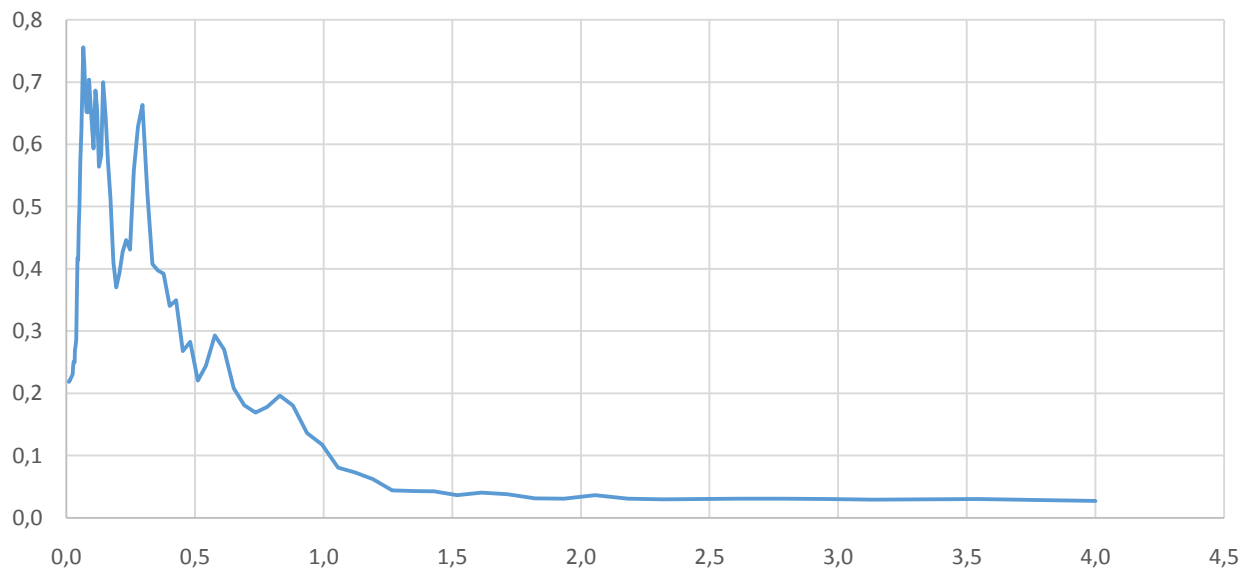
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 642



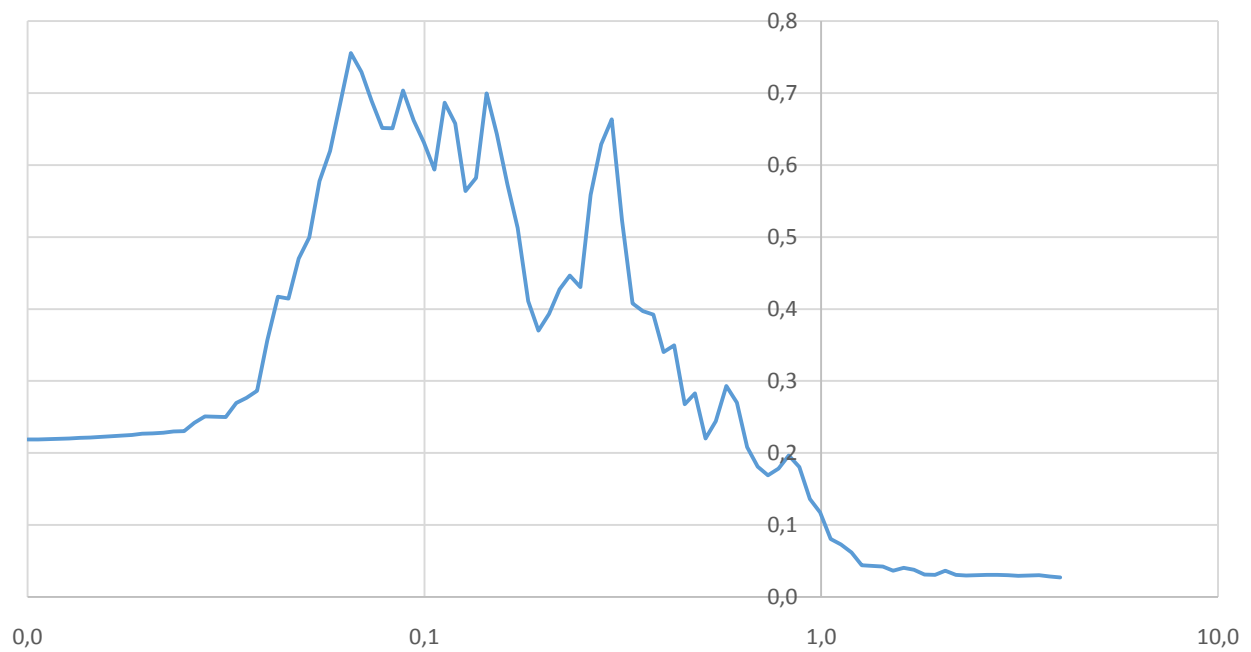
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 642



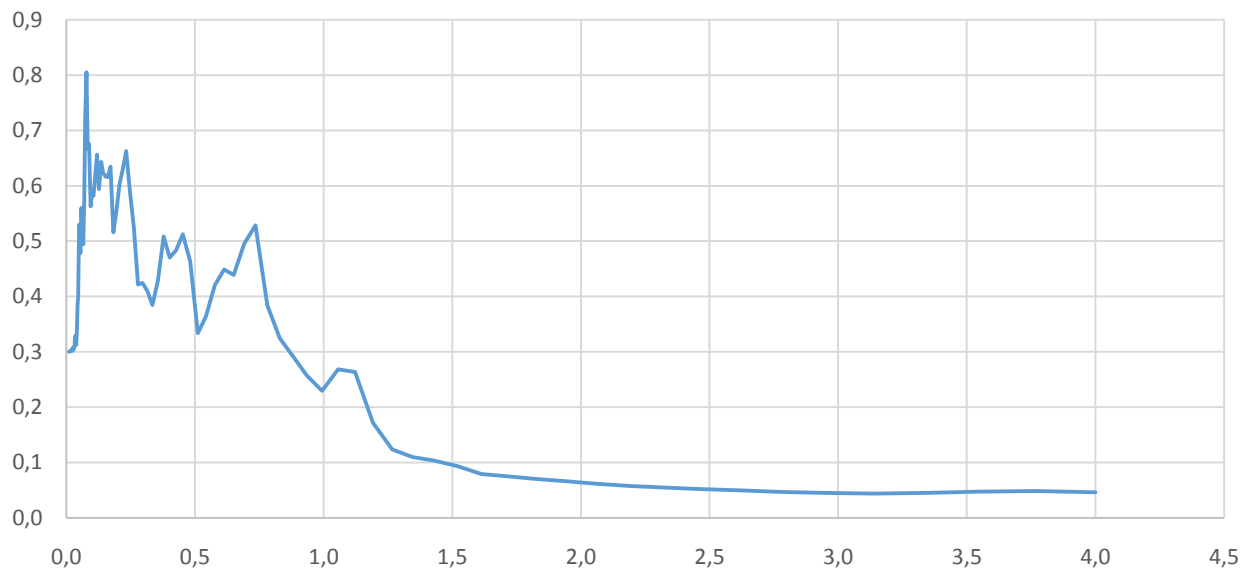
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 293



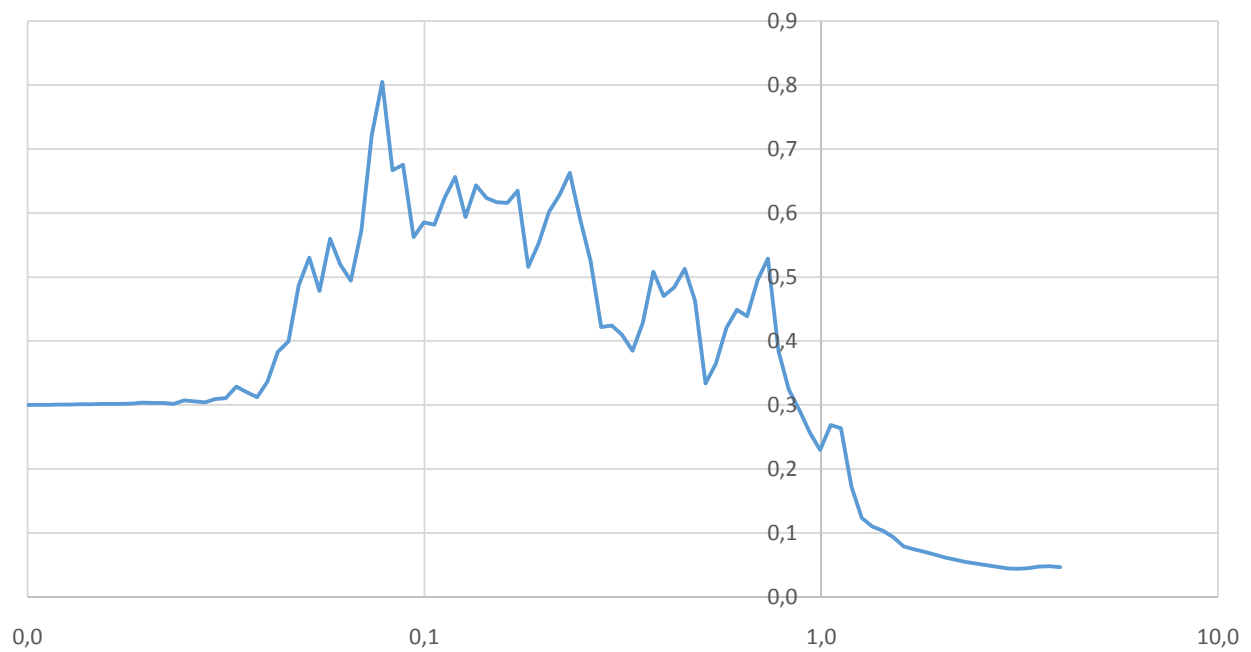
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 293



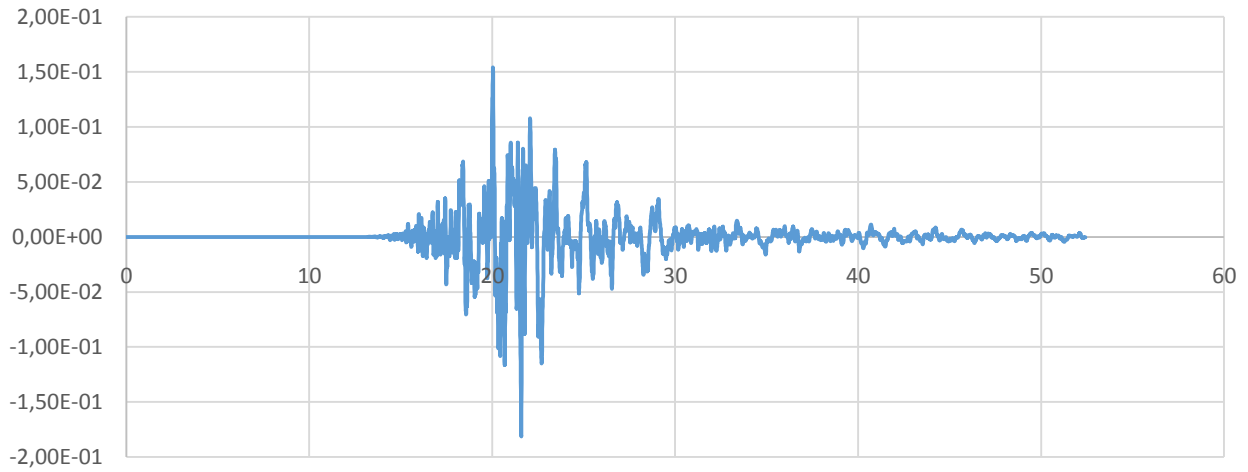
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 294



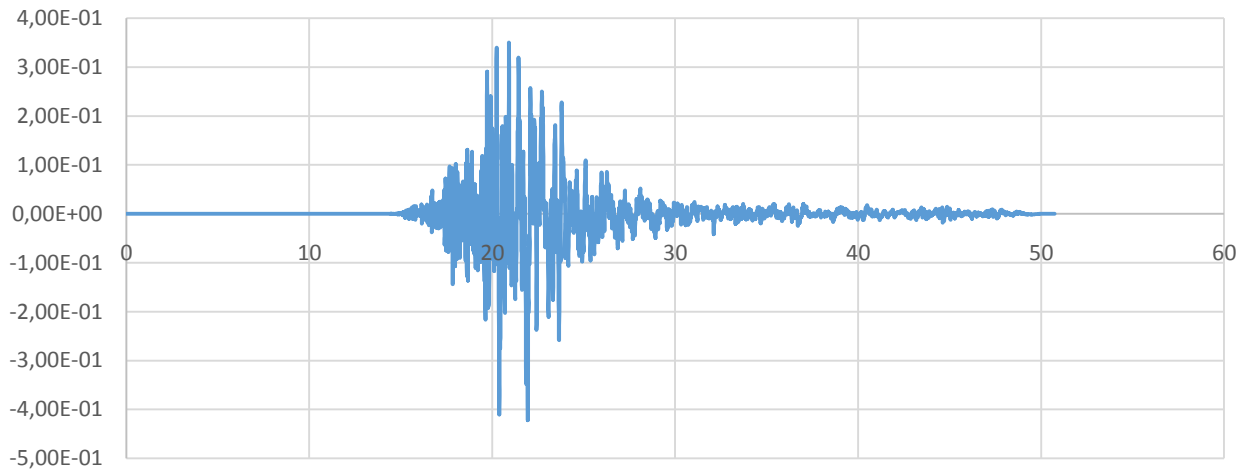
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 294



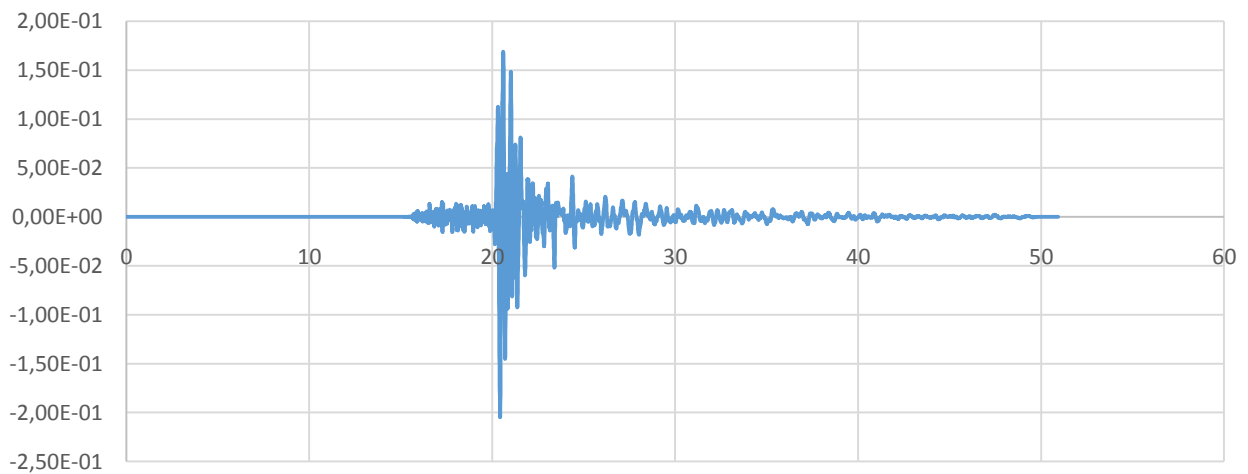
ACCELEROGRAMMA 1 / SCENARIO 288



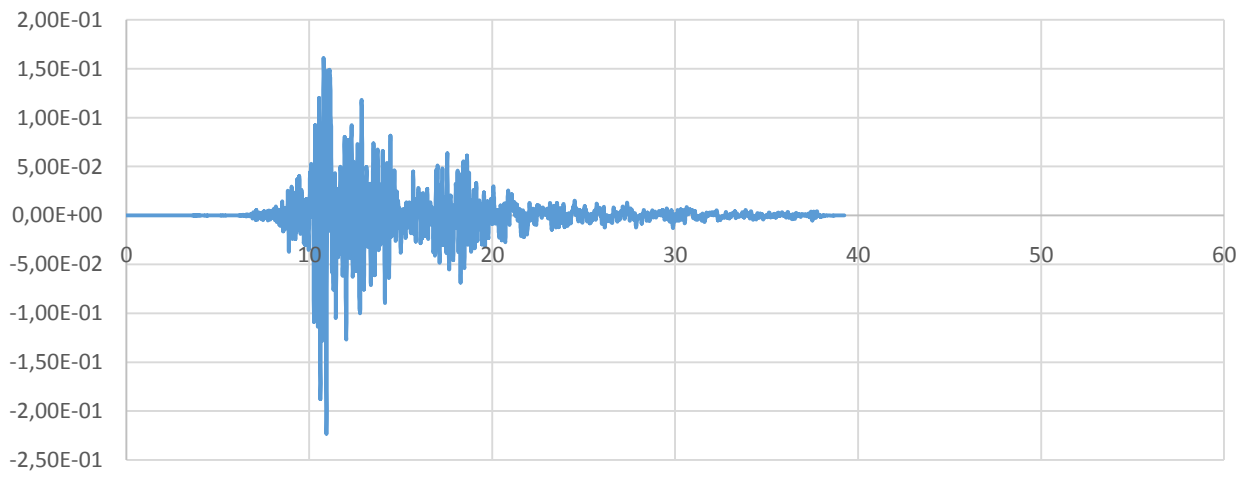
ACCELEROGRAMMA 2 / SCENARIO 289



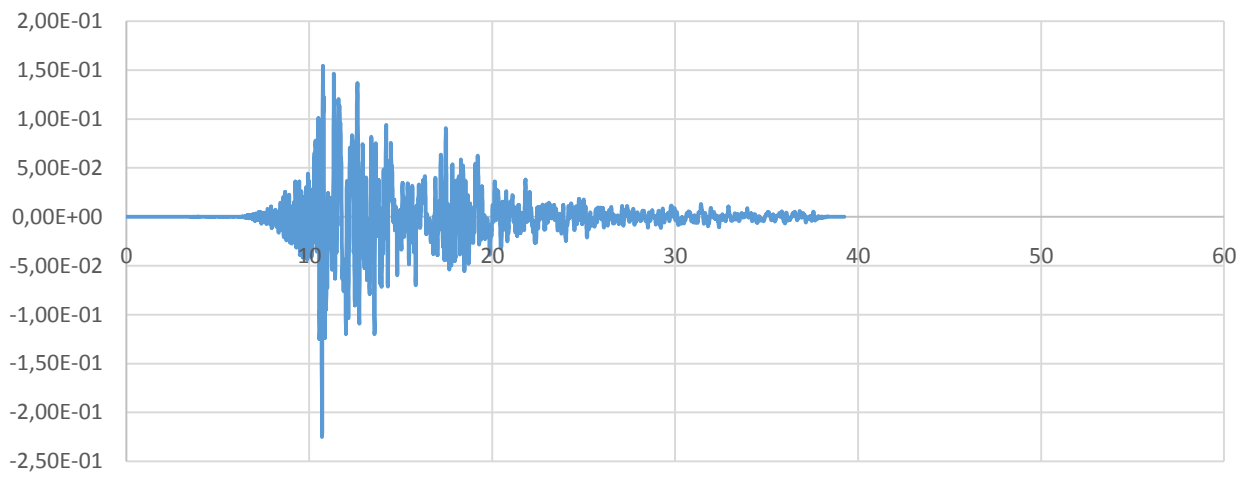
ACCELEROGRAMMA 3 / SCENARIO 290



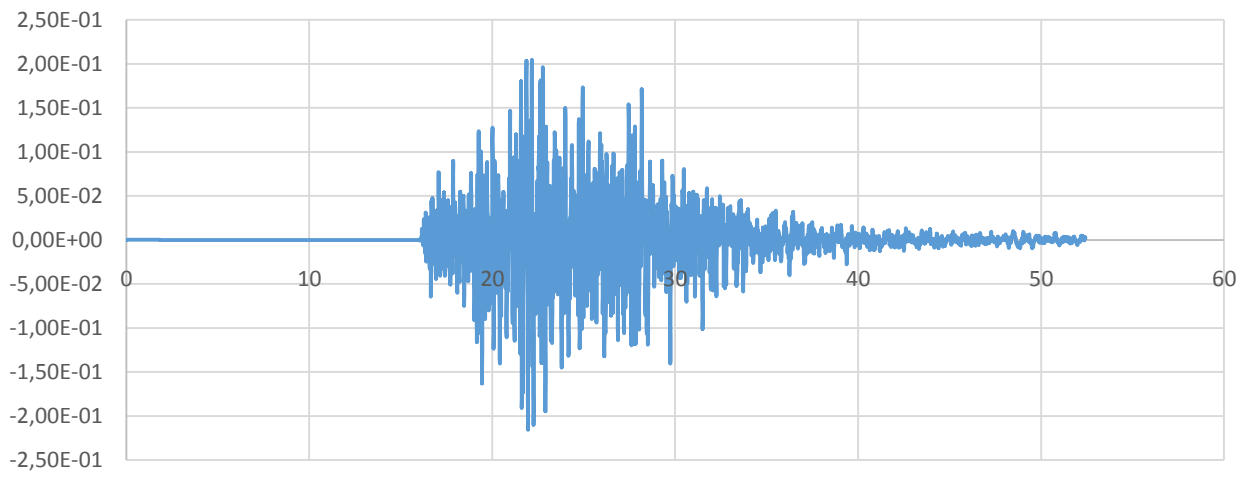
ACCELEROGRAMMA 4 / SCENARIO 690



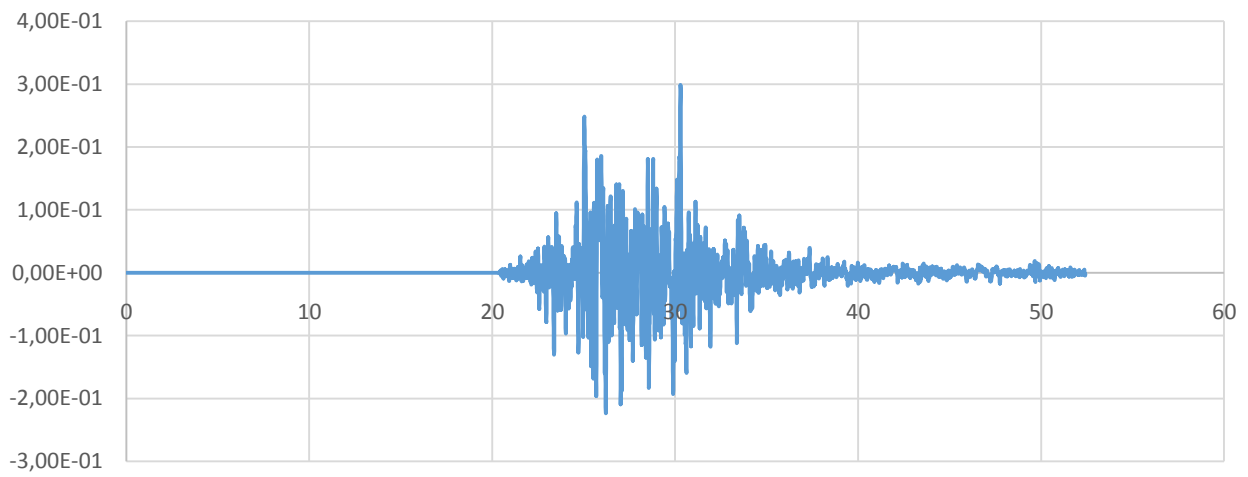
ACCELEROGRAMMA 5 / SCENARIO 642



ACCELEROGRAMMA 6 / SCENARIO 293



ACCELEROGRAMMA 7 / SCENARIO 294



3. MOPS 2003

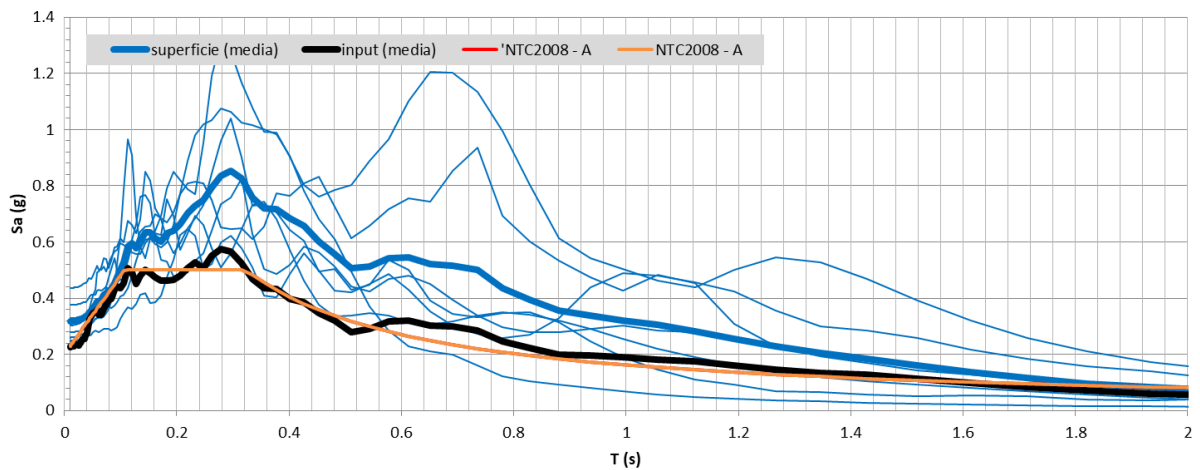
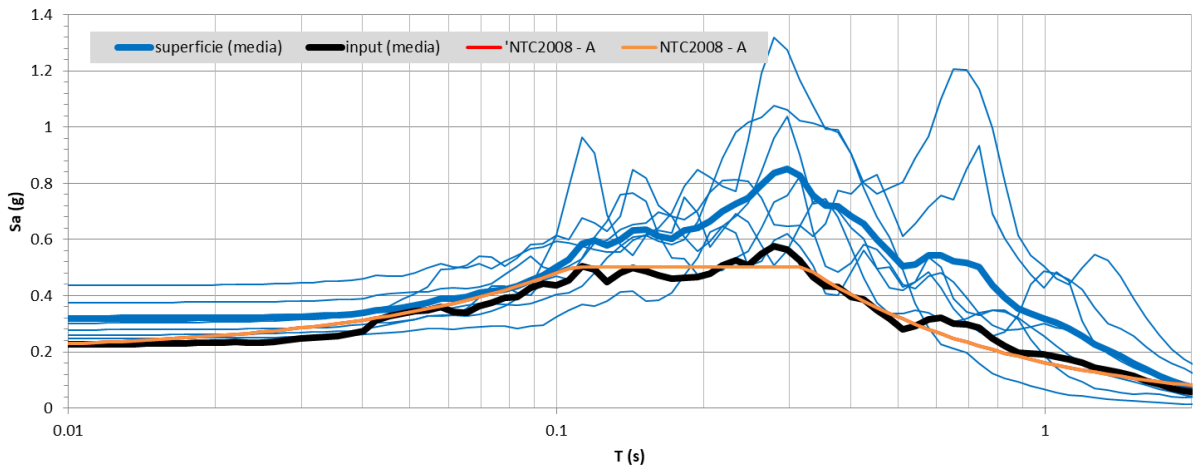
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.53	1.79	1.78
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.34	1.53	1.75
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.64	1.79	1.96
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.60	1.78	1.97

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

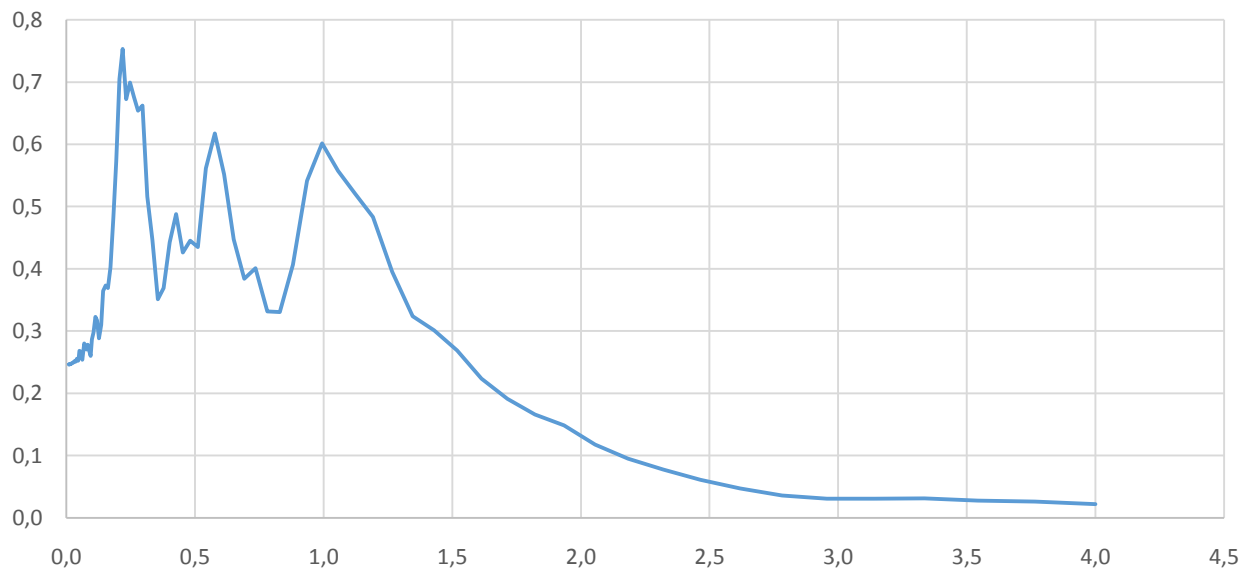
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

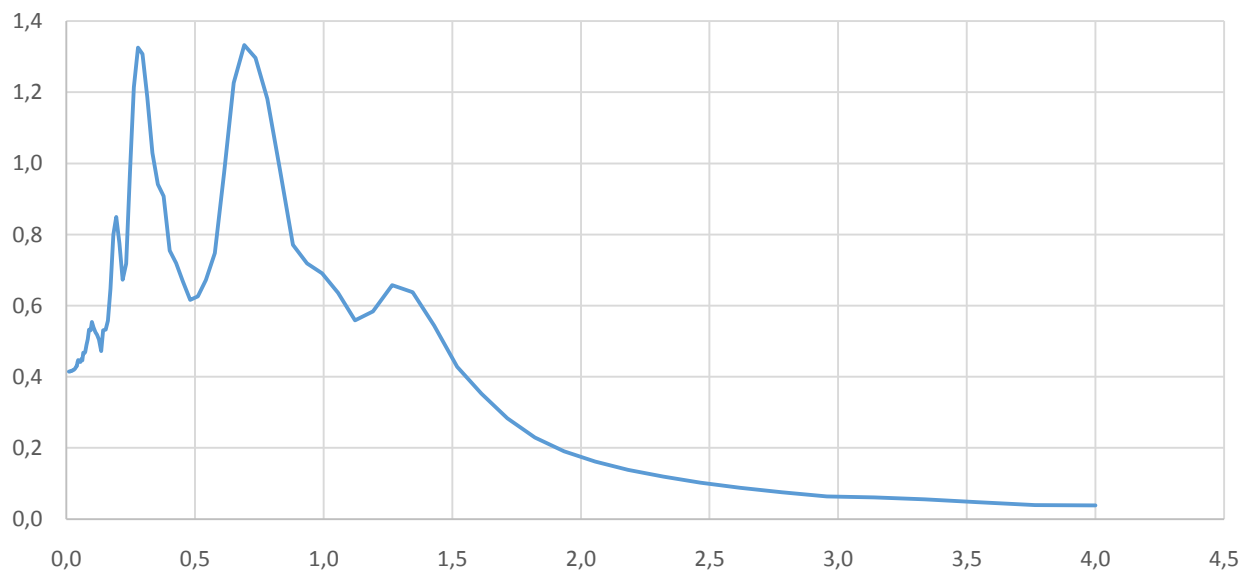
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



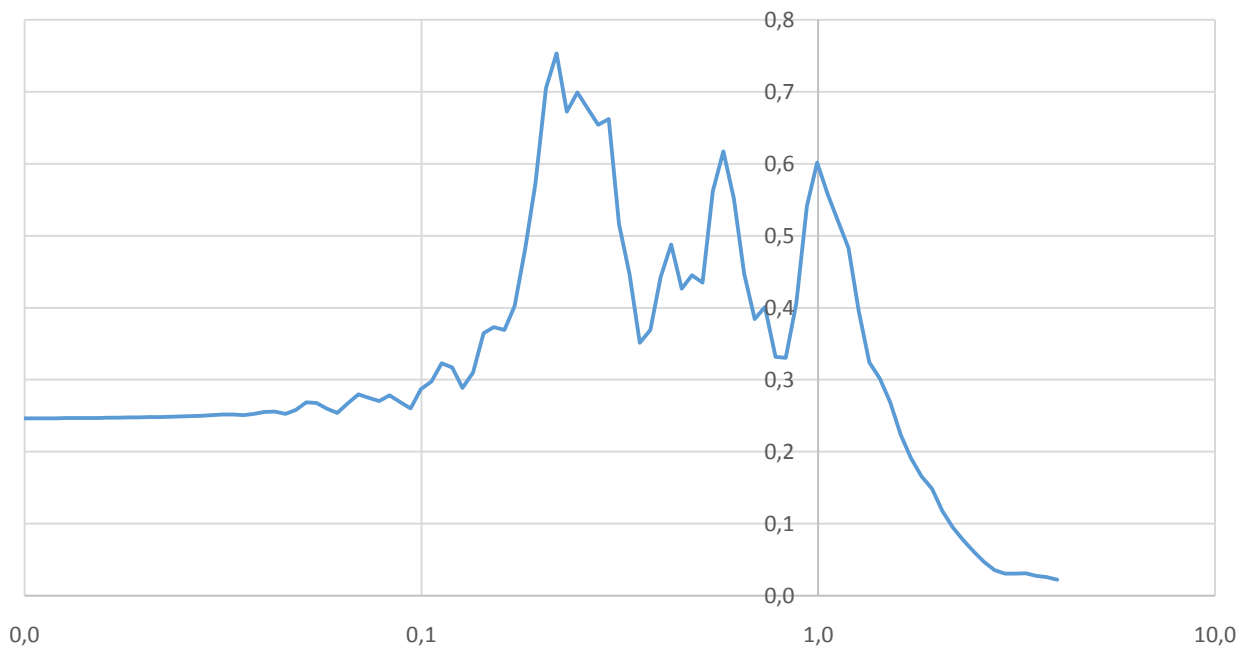
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 211



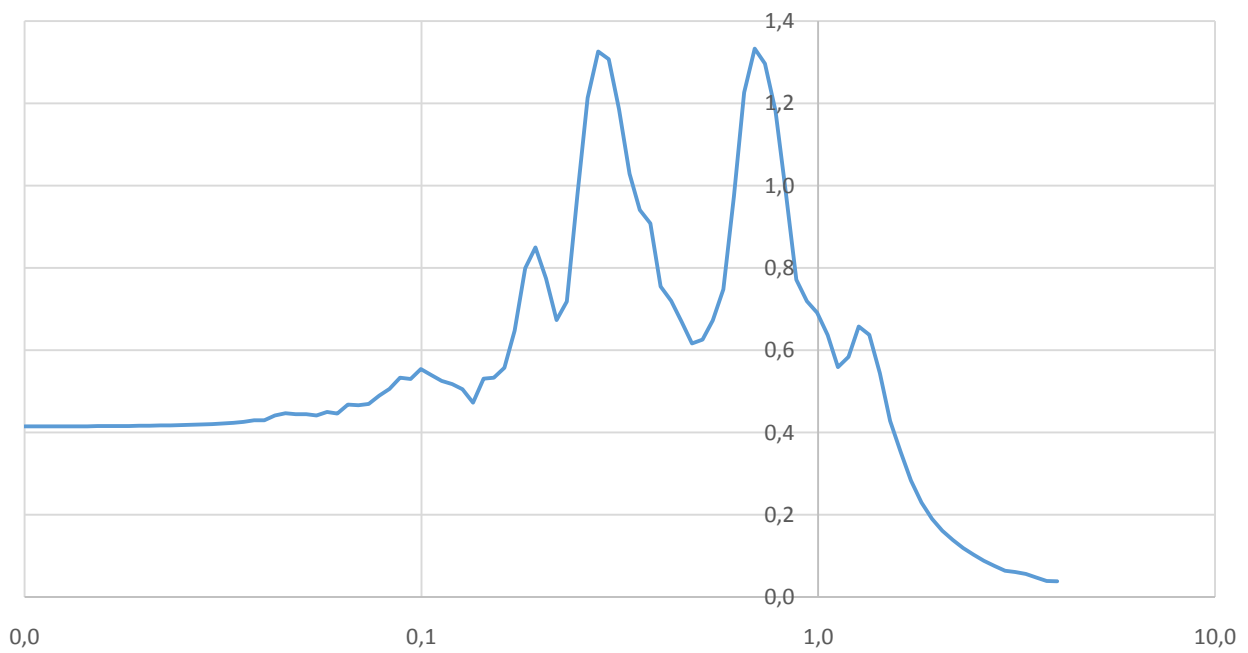
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 569



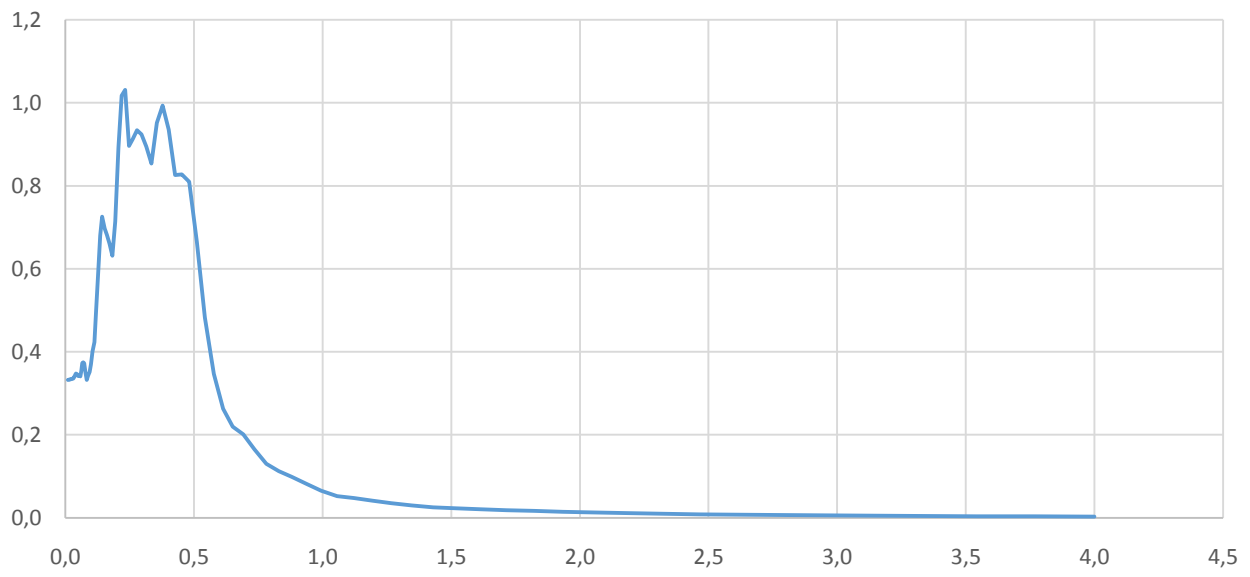
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 211



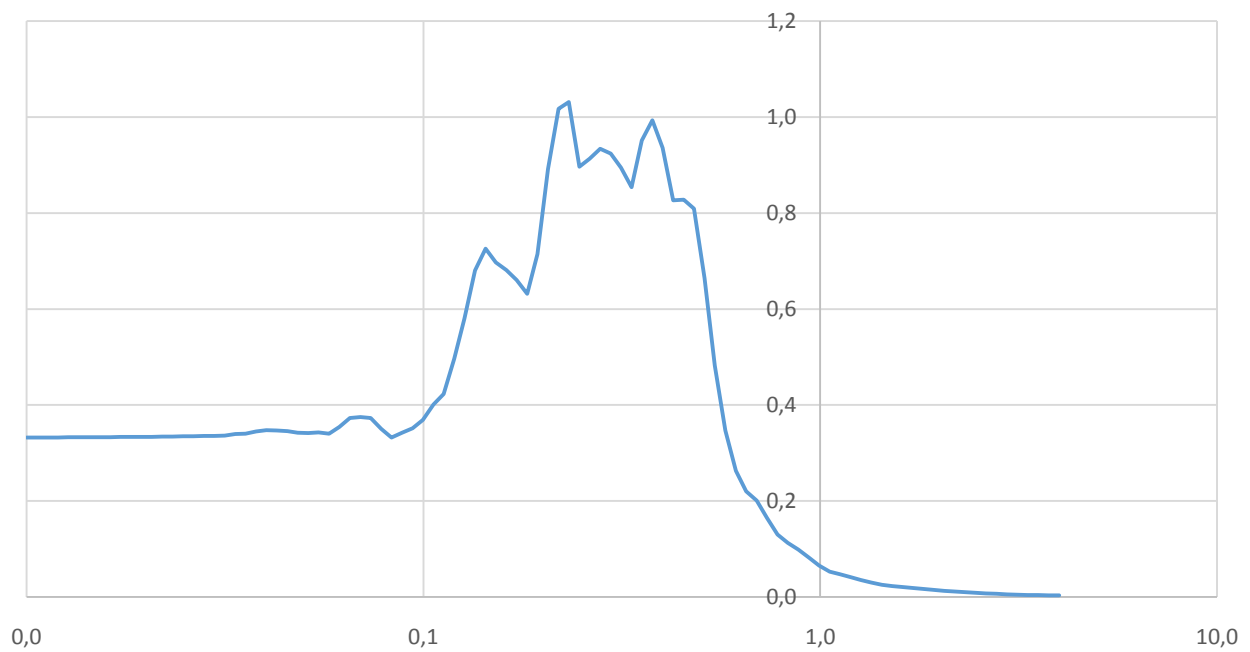
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 569



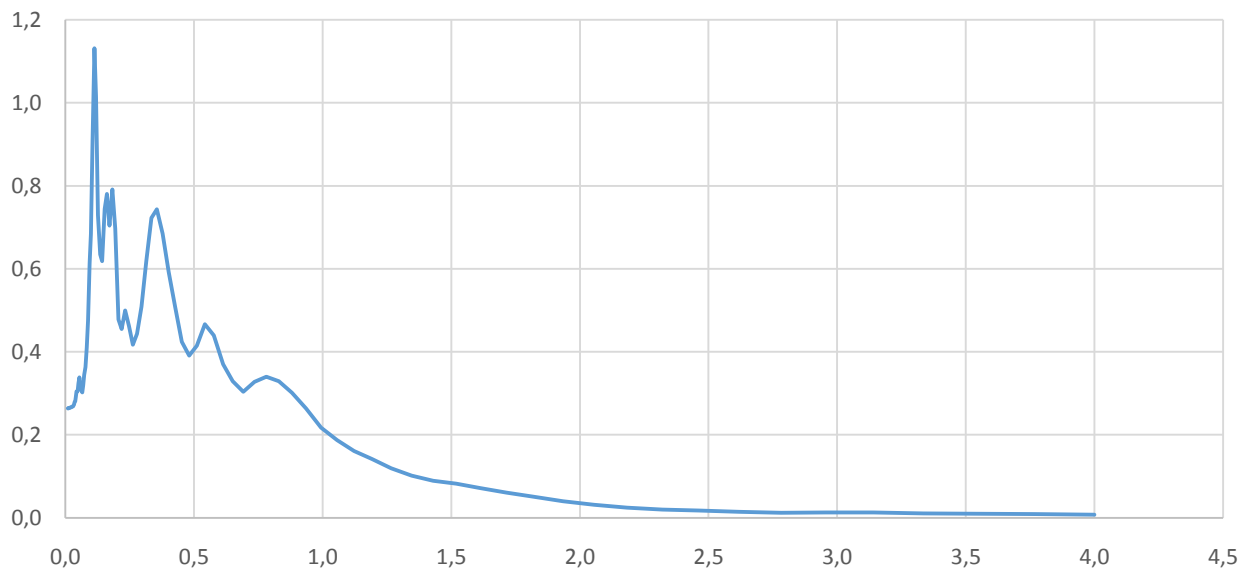
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 598



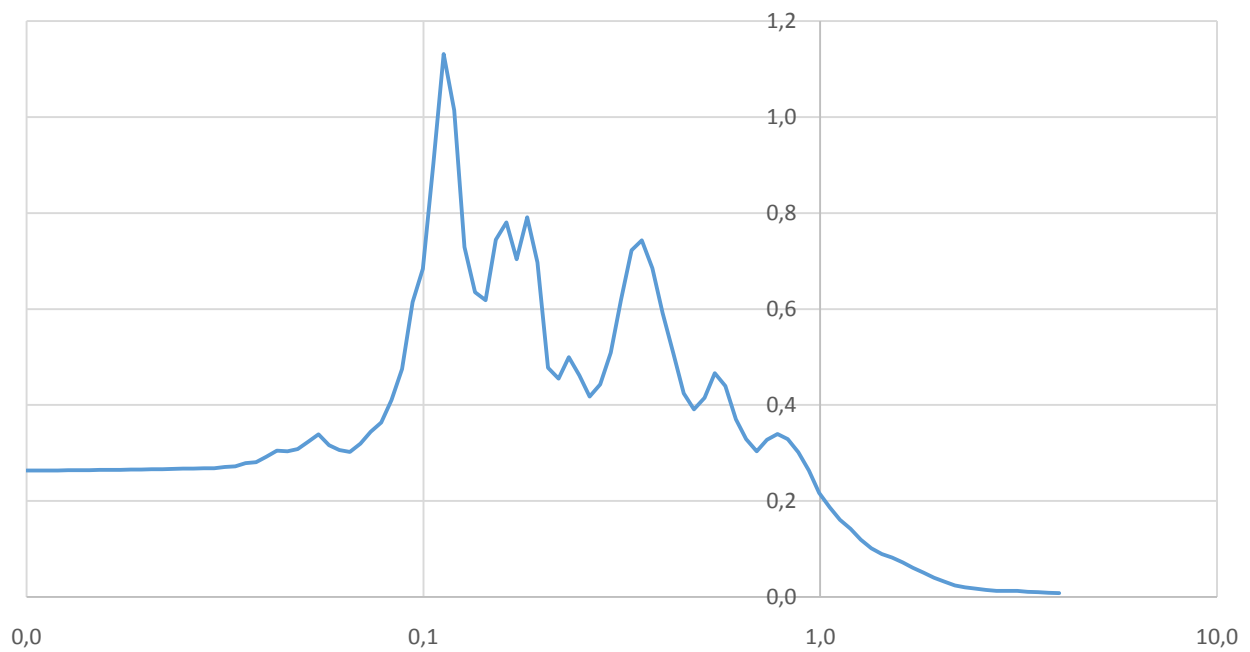
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 598



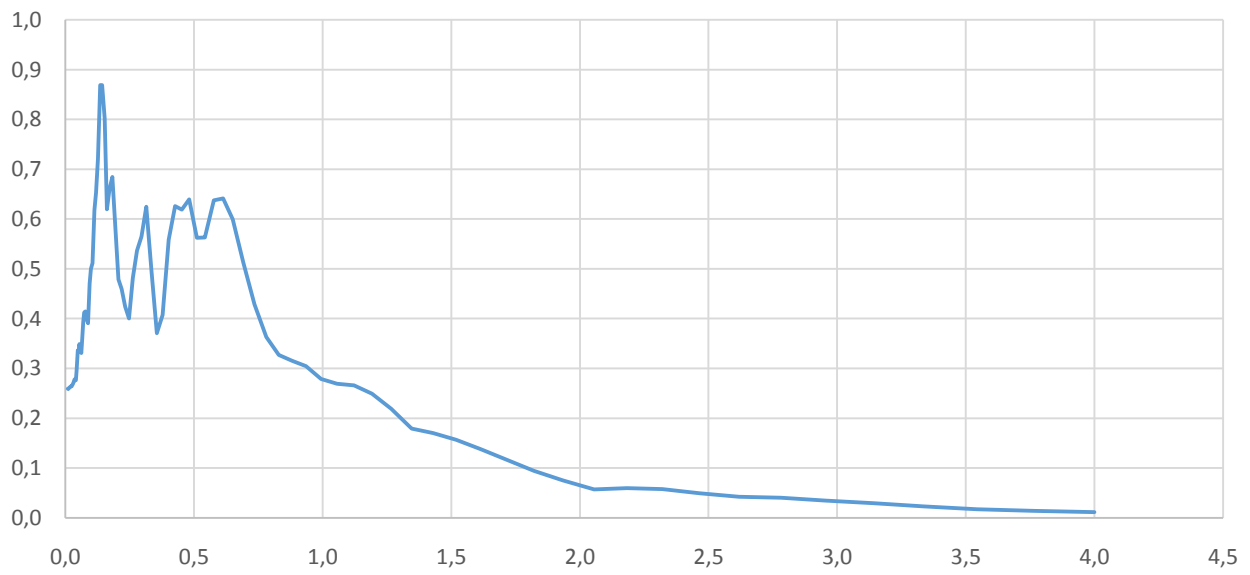
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 473



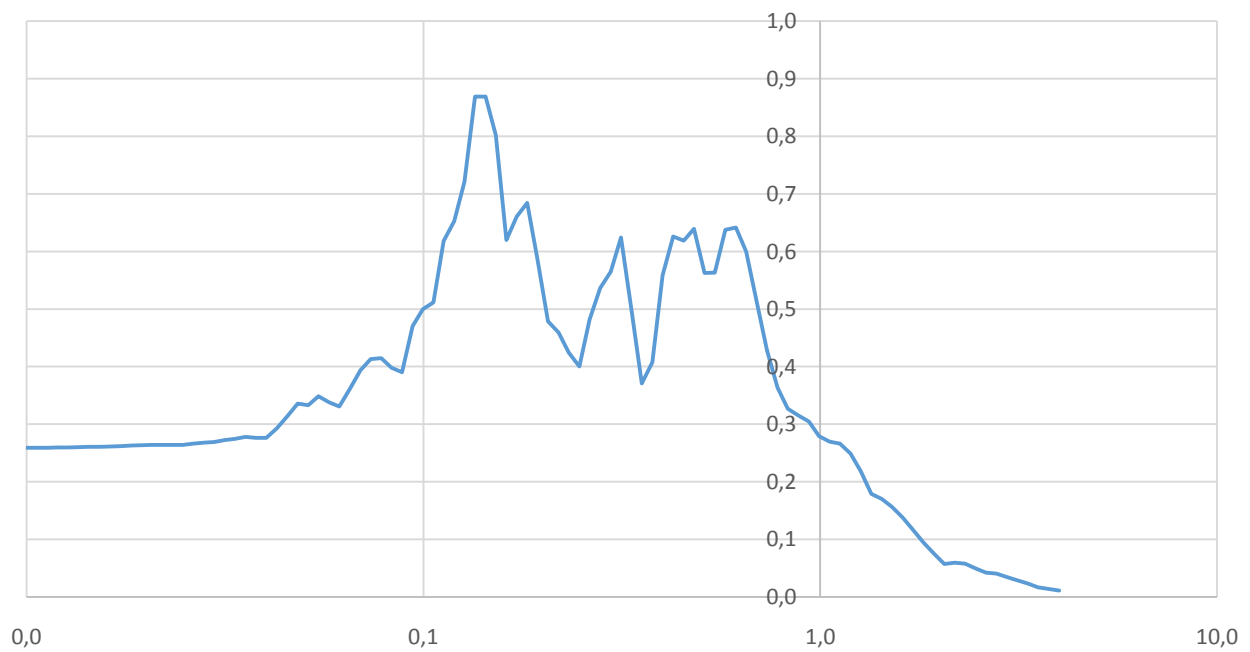
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 473



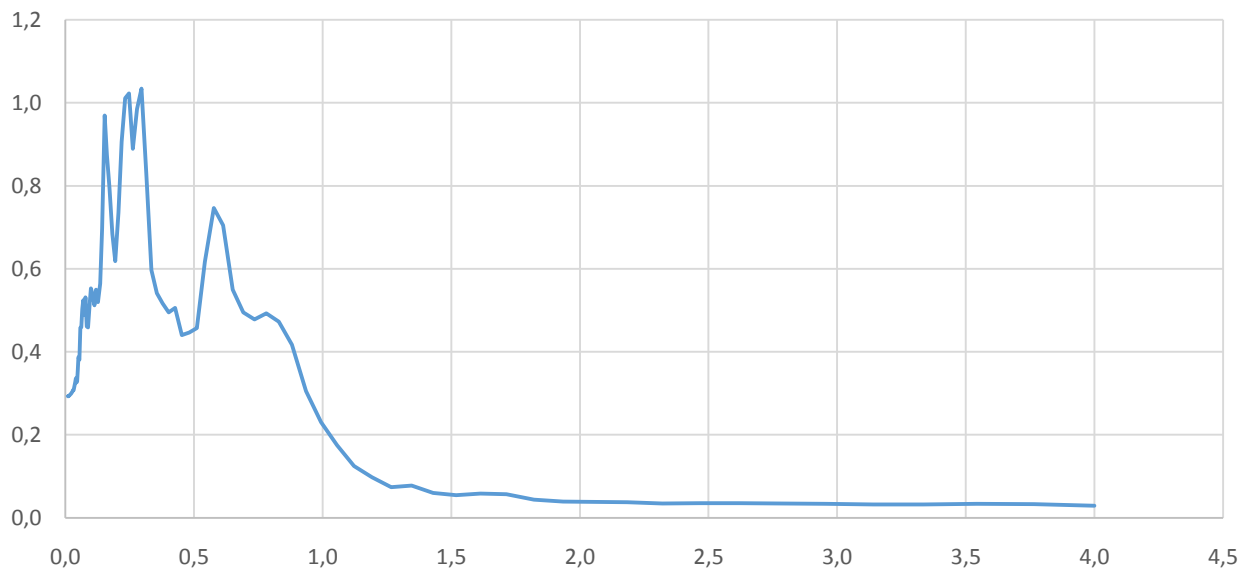
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 313



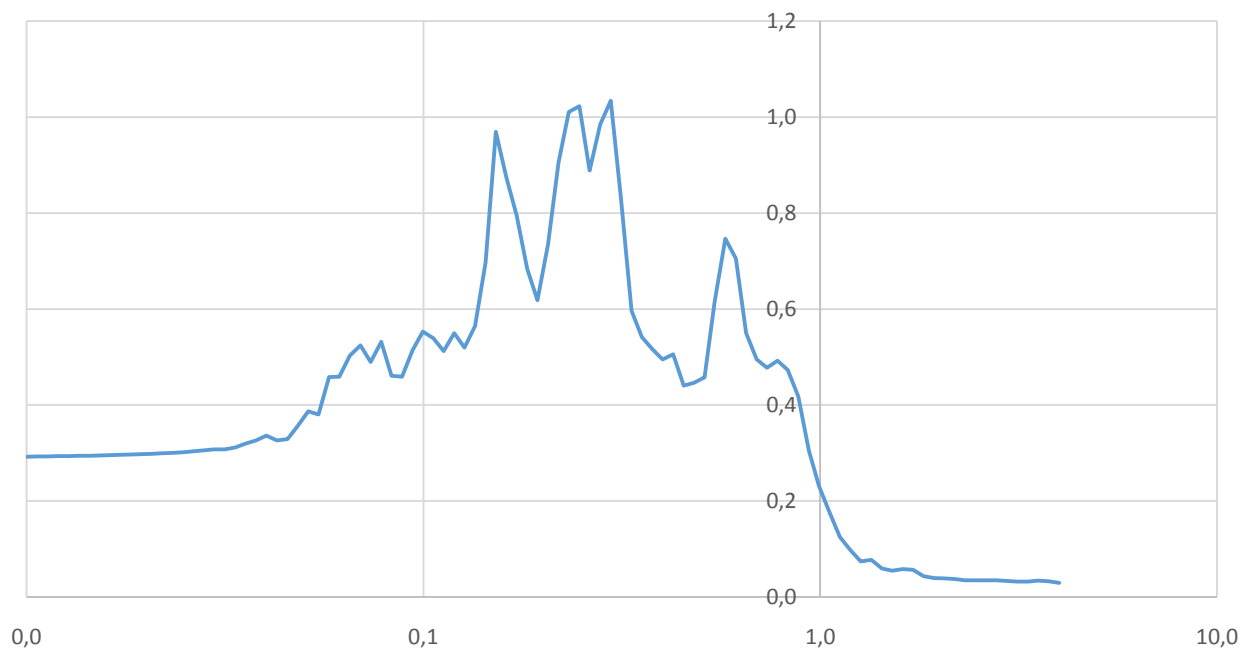
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 313



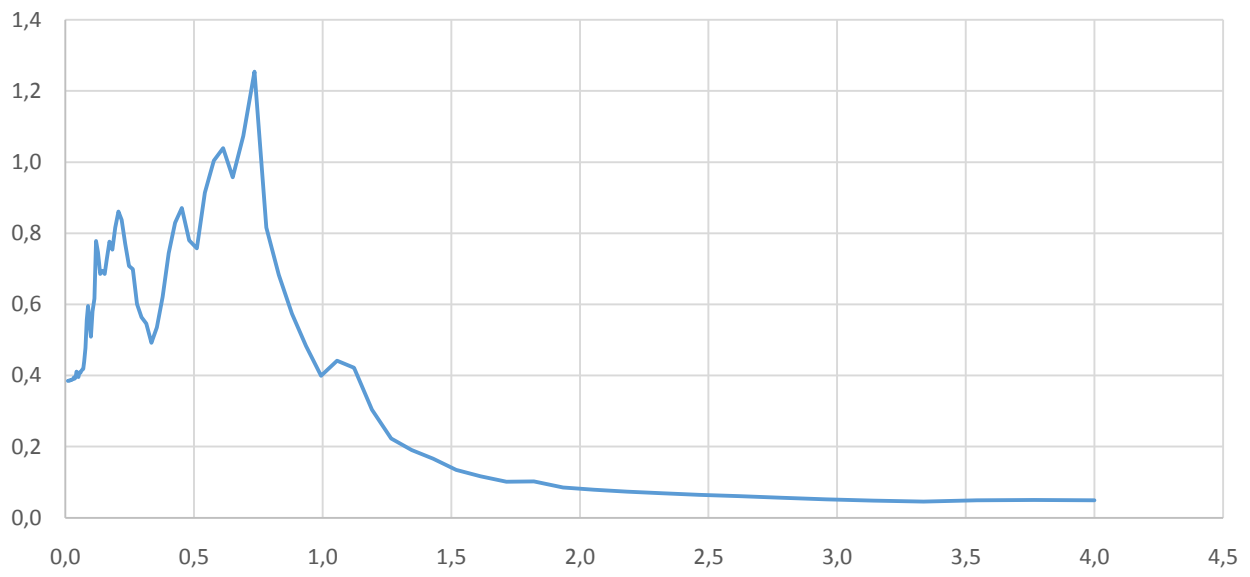
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 34



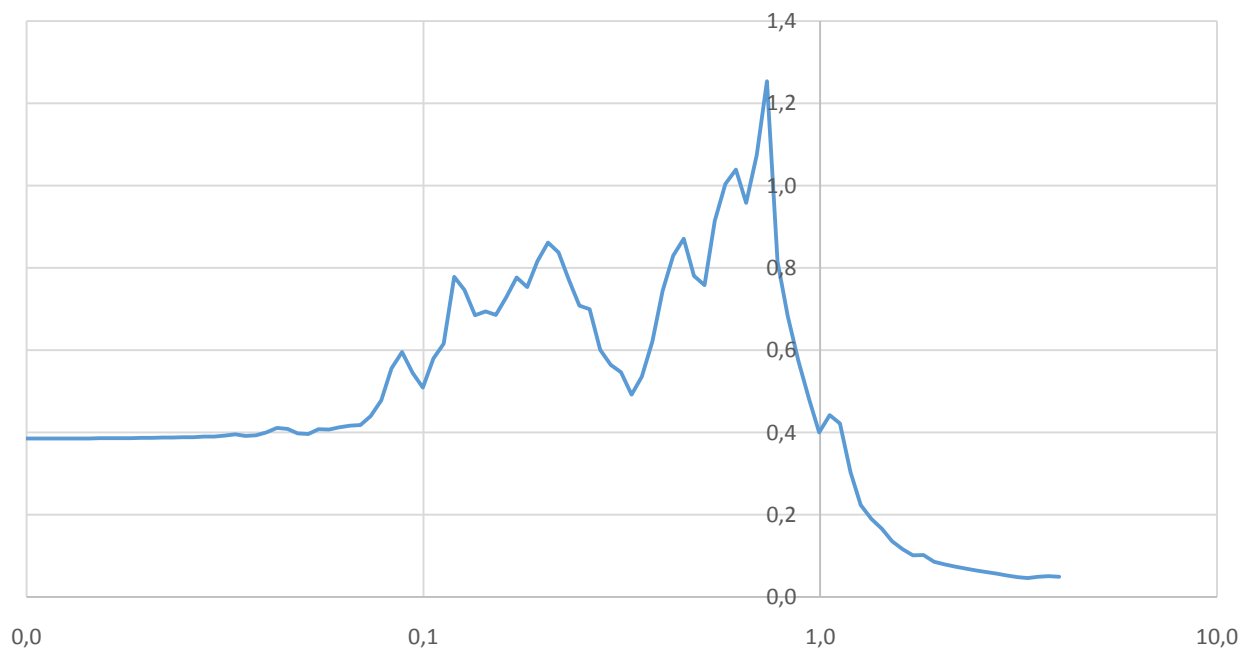
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 34



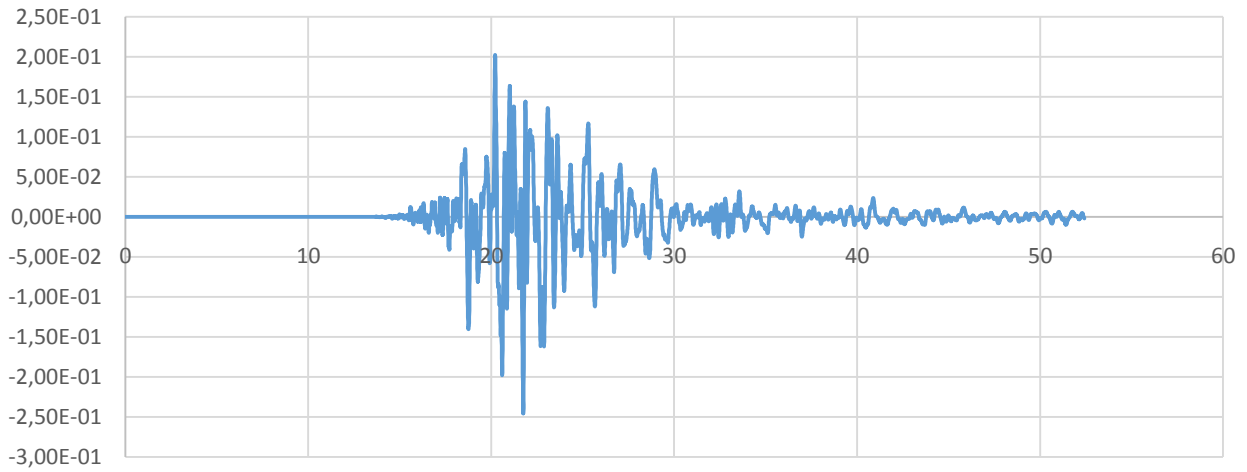
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 476



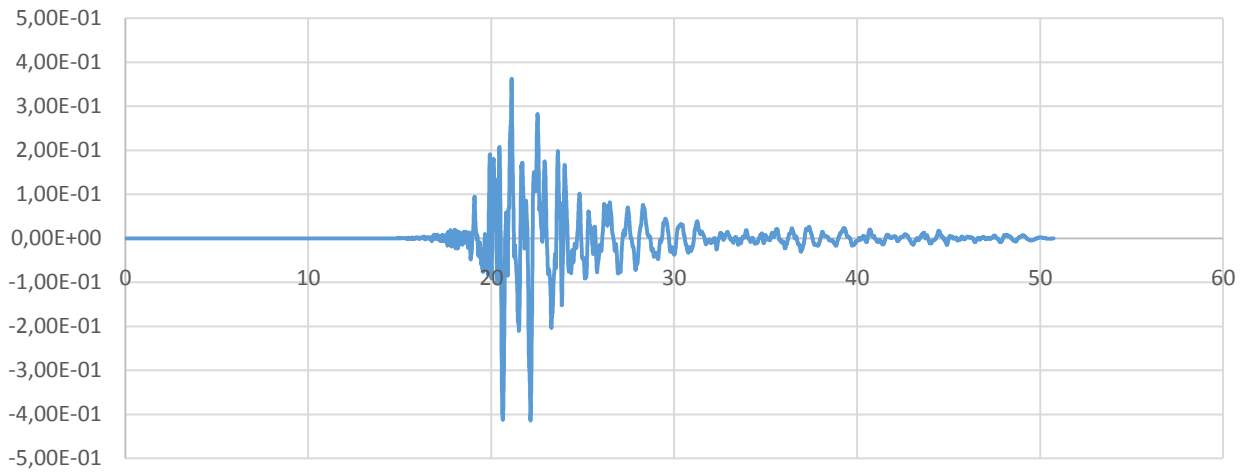
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 476



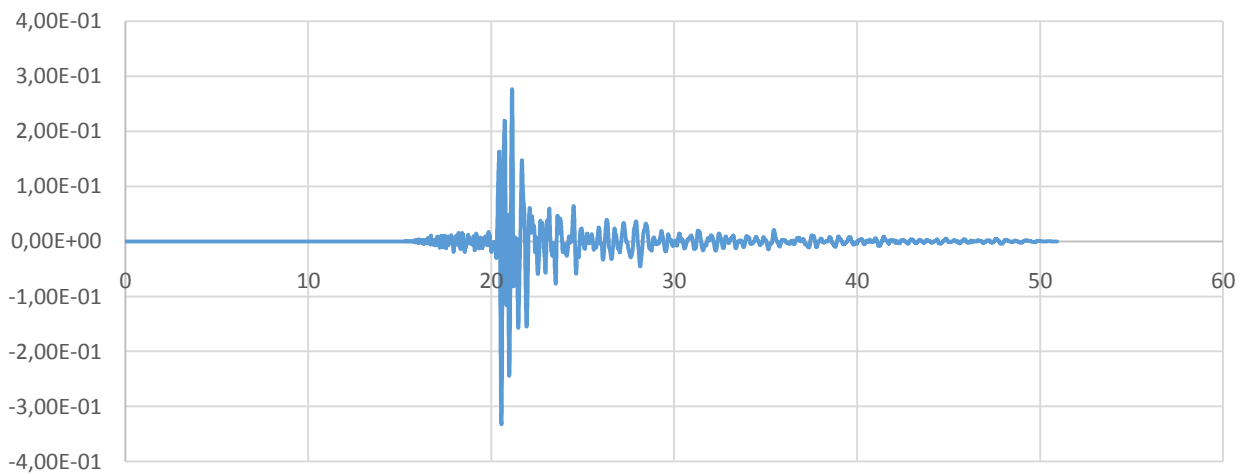
ACCELEROGRAMMA 1 / SCENARIO 211



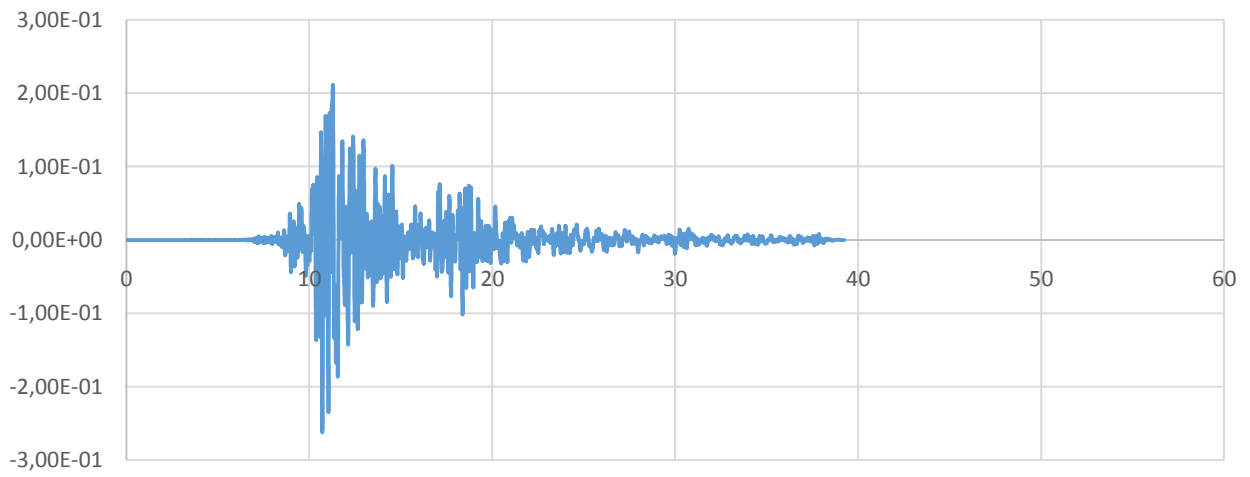
ACCELEROGRAMMA 2 / SCENARIO 569



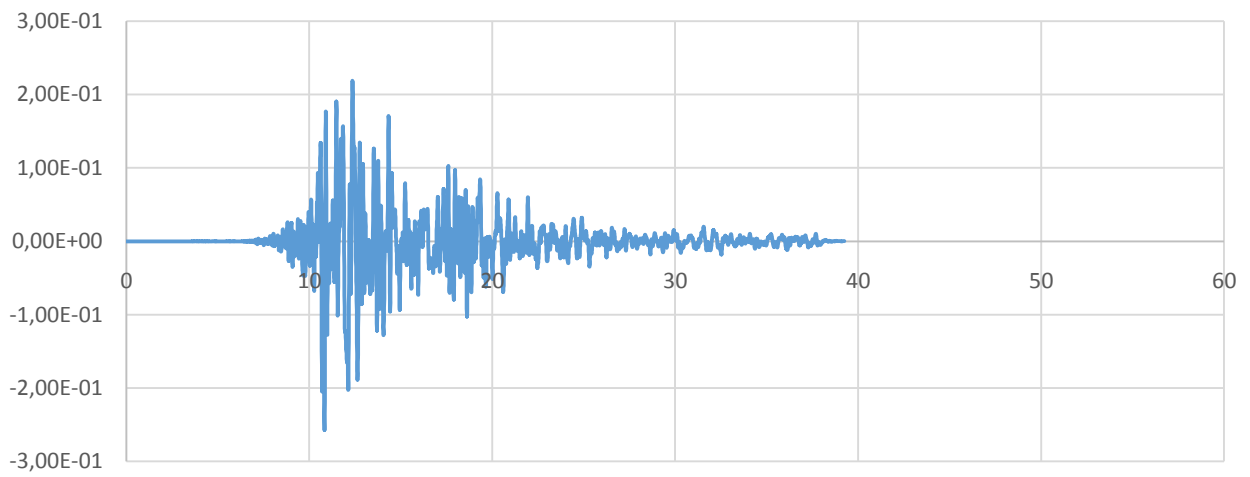
ACCELEROGRAMMA 3 / SCENARIO 598



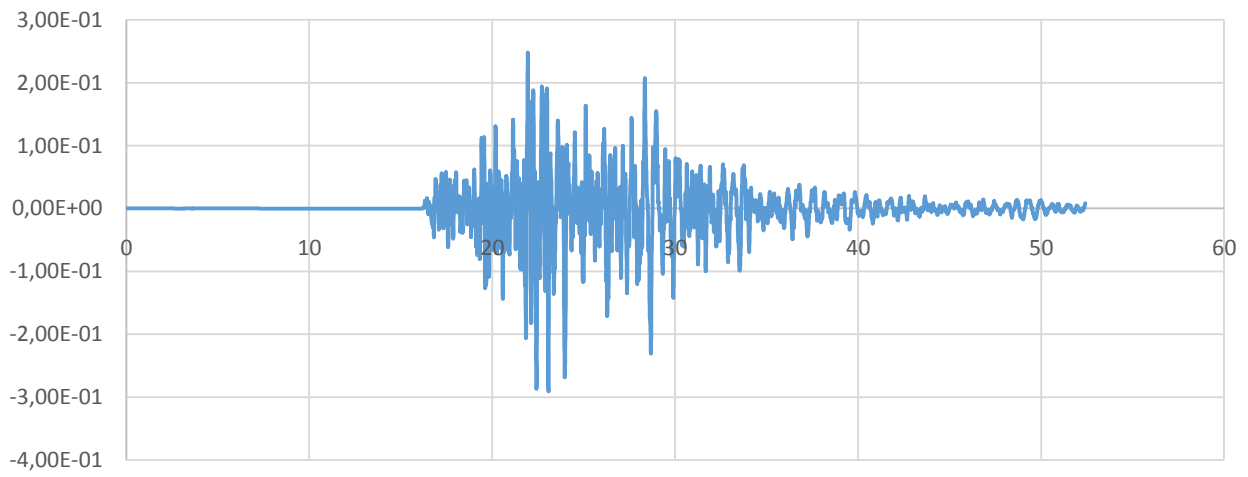
ACCELEROGRAMMA 4 / SCENARIO 473



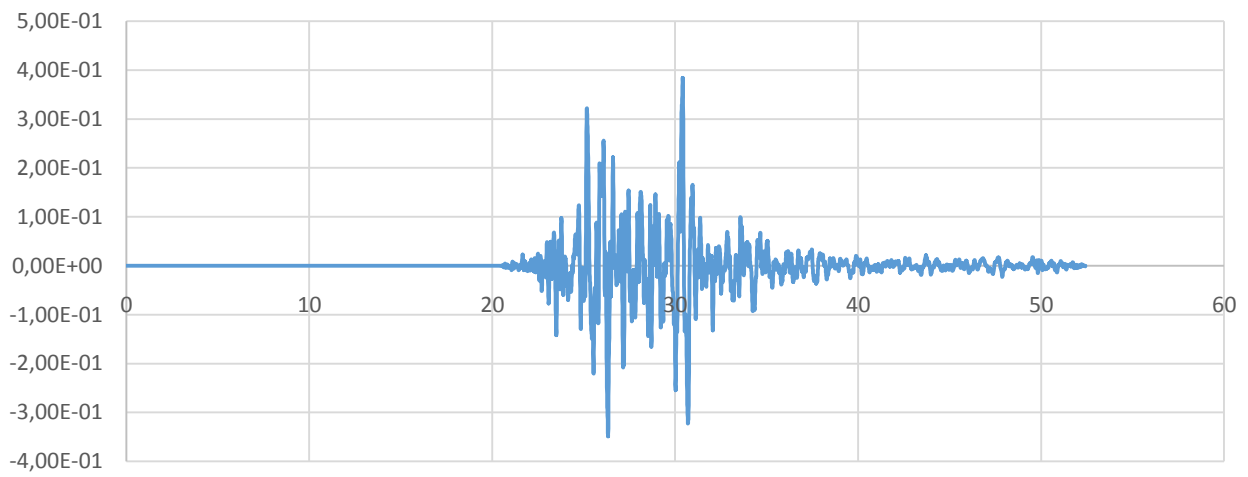
ACCELEROGRAMMA 5 / SCENARIO 313



ACCELEROGRAMMA 6 / SCENARIO 34

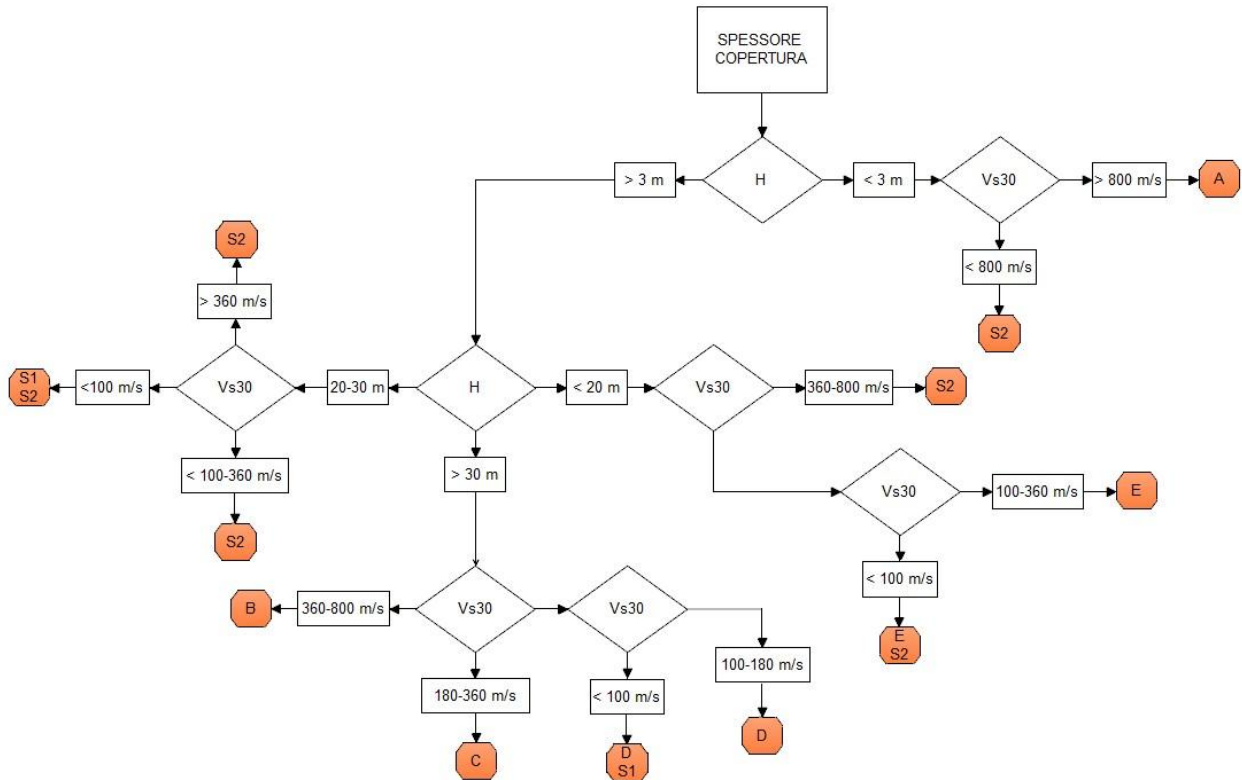


ACCELEROGRAMMA 7 / SCENARIO 476



L'assegnazione di una categoria di sottosuolo secondo NTC08 a partire da un valore di V_{s30} è stata eseguita nella presente MOPS 2003 in cui esiste un profilo di V_s univocamente definito (ovvero solo dove è stata eseguita la prova DH). Detta classe di sottosuolo vale solo per il punto dove questa è stata ricavata e non va intesa come rappresentativa dell'intera MOPS.

Il valore V_{s30} calcolato in corrispondenza della prova DH1 è $V_s=346,6$ m/sec.



	100	180	360			800 >800		
0,00 m	E/S1	E	E	S2	S2	A		
3,00 m								
20,00 m	S2/S1	S2						S2
30,00 m	D/S1	D	C	B				
>30,00 m								

Vs30

4. MOPS 2004

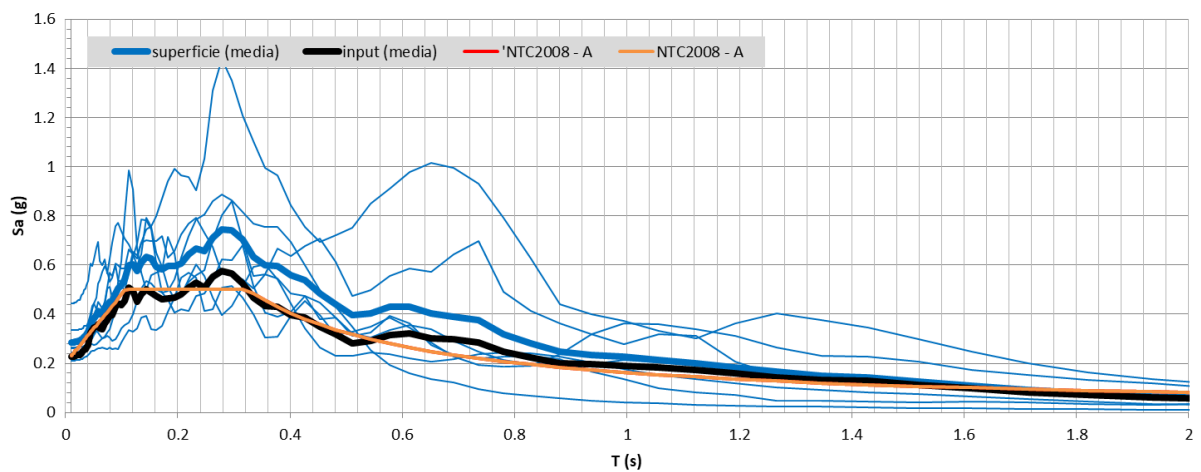
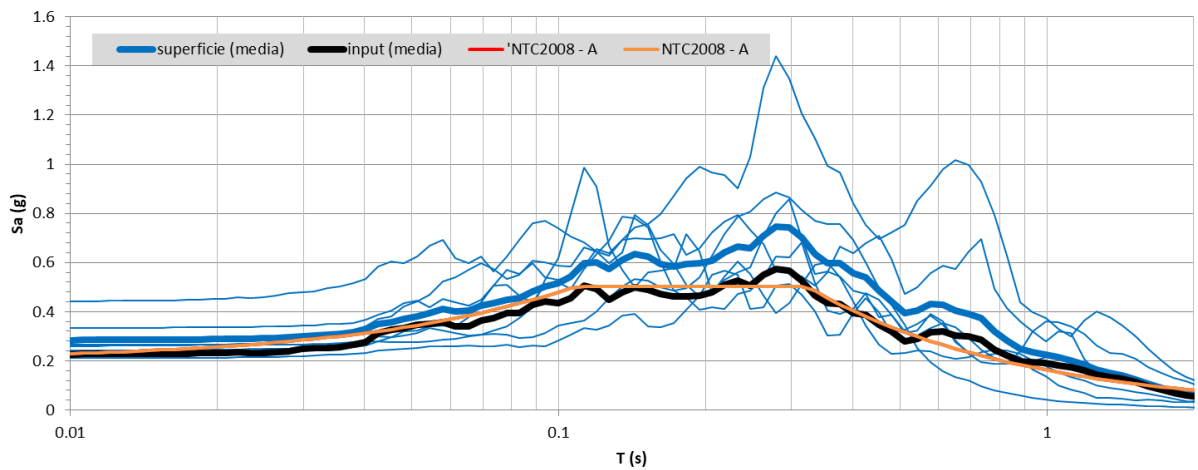
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.33	1.35	1.24
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.28	1.33	1.38
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.30	1.35	1.40
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.17	1.24	1.32

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

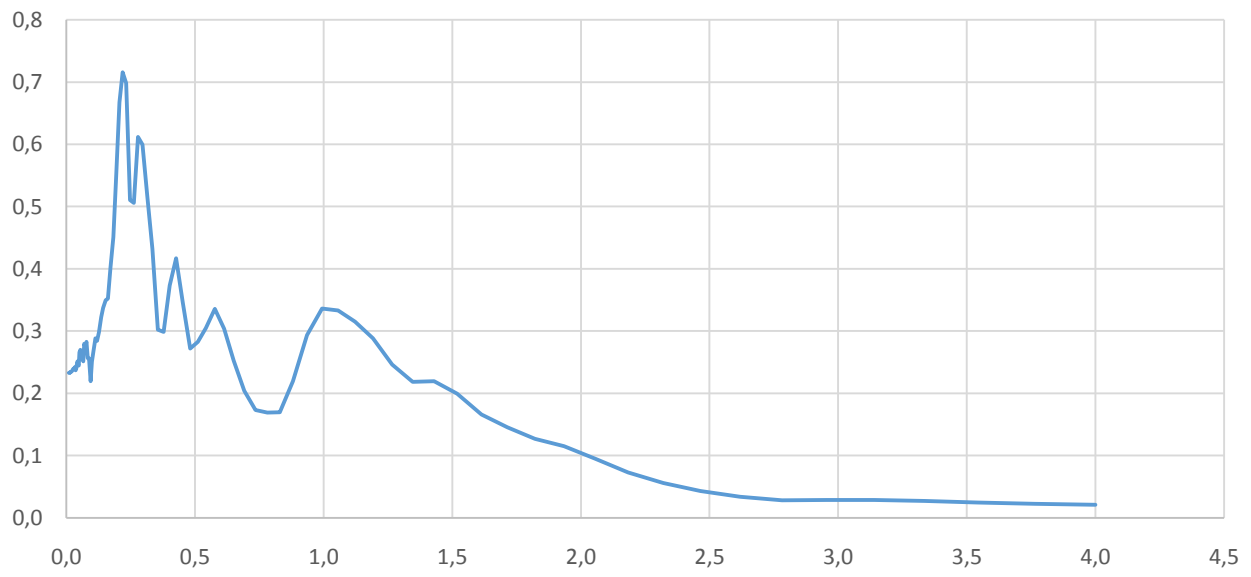
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

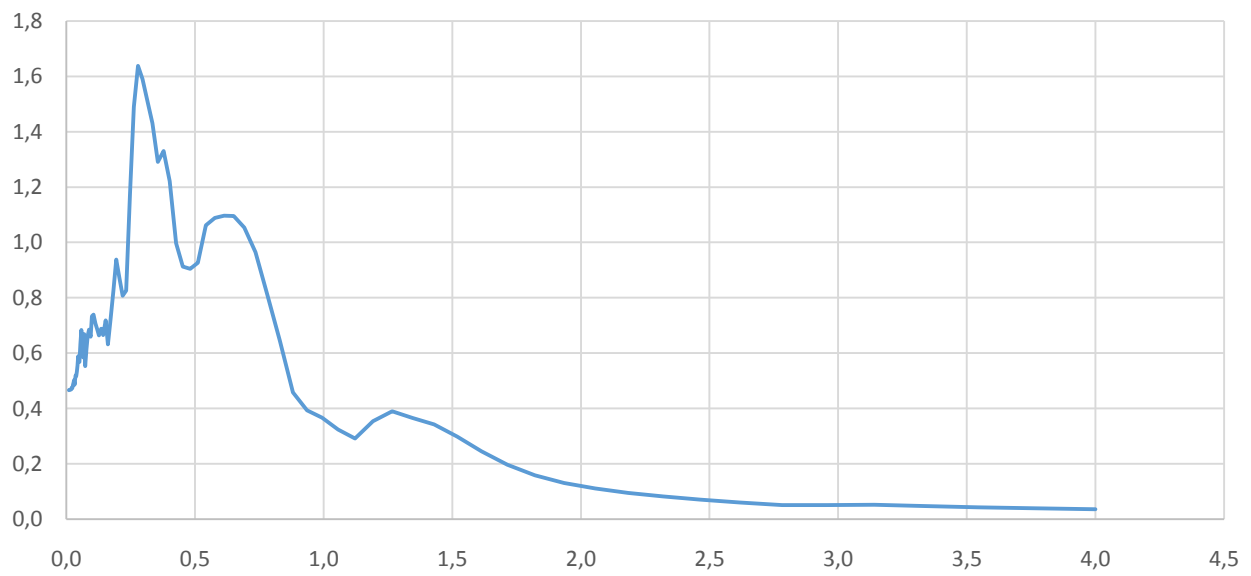
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



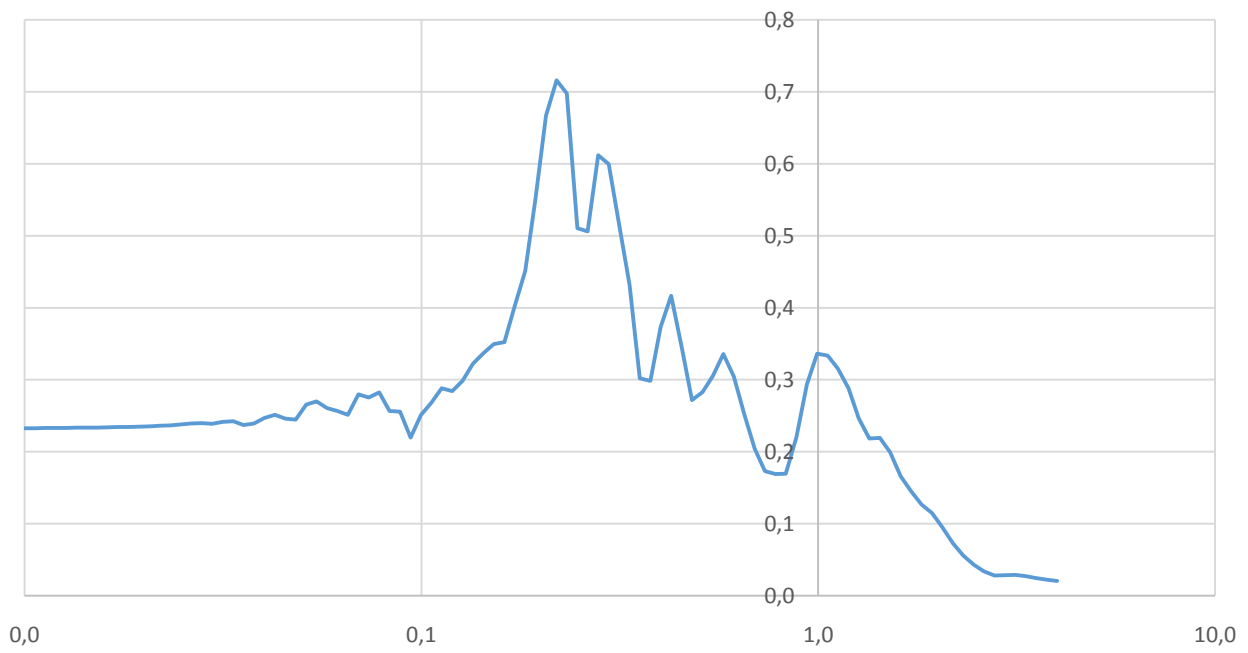
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 477



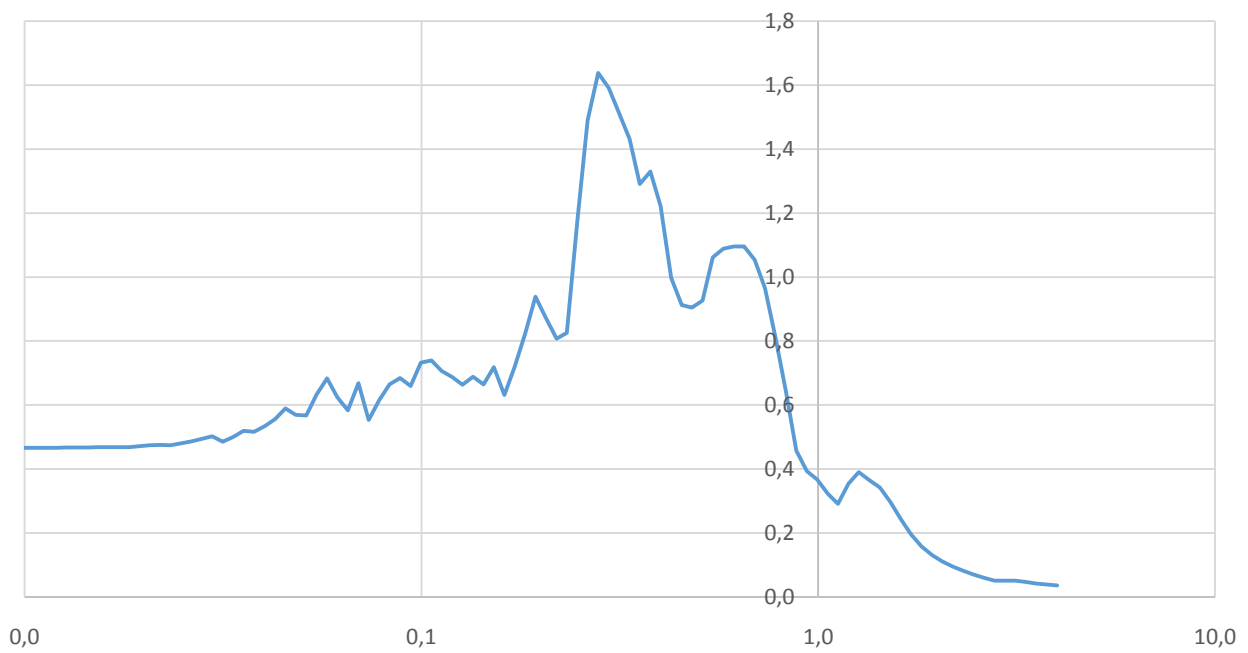
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 310



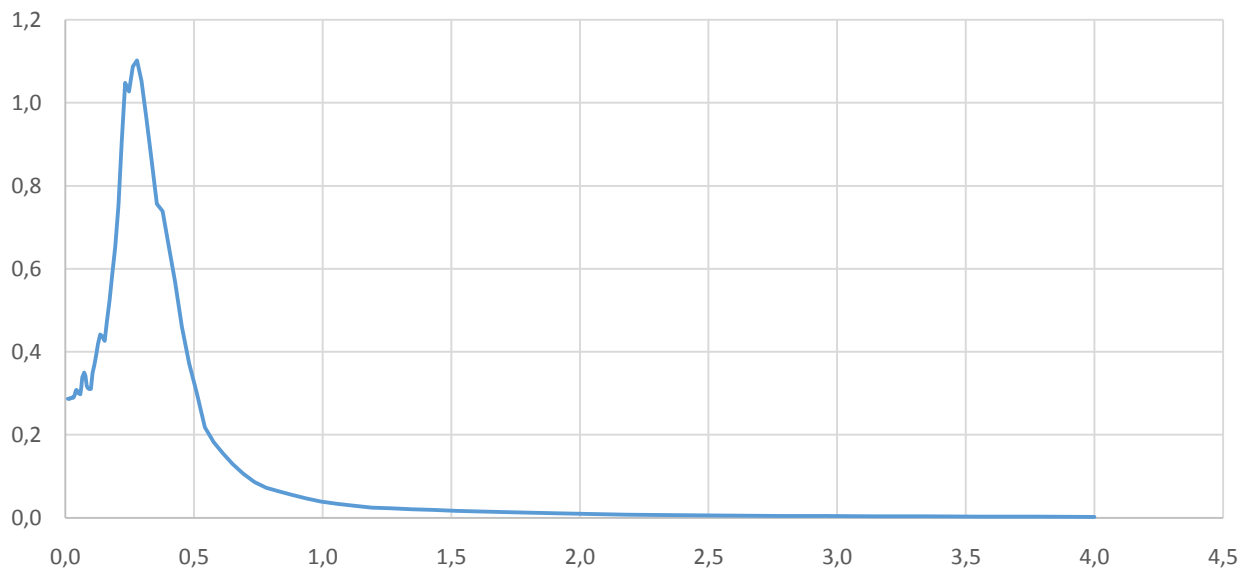
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 477



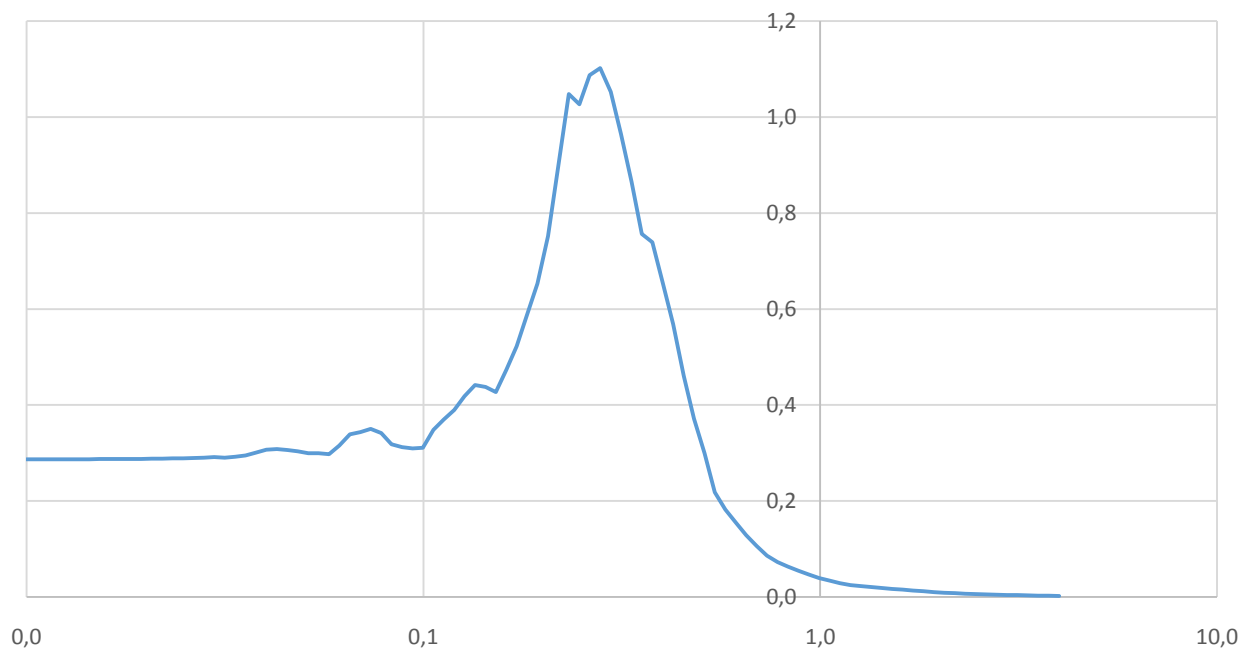
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 310



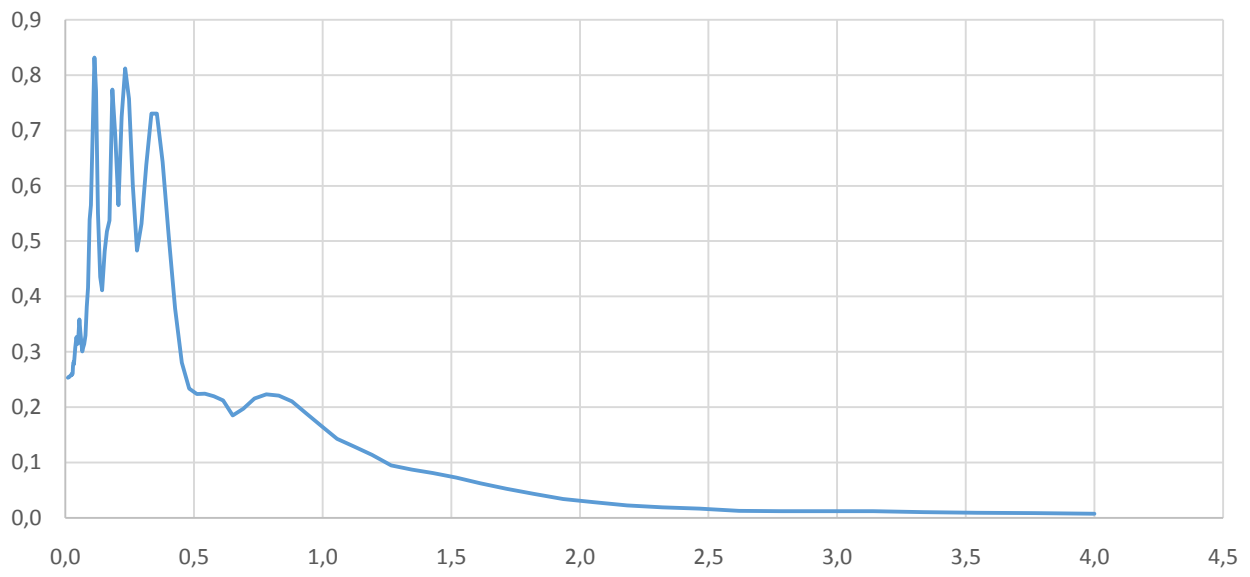
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 479



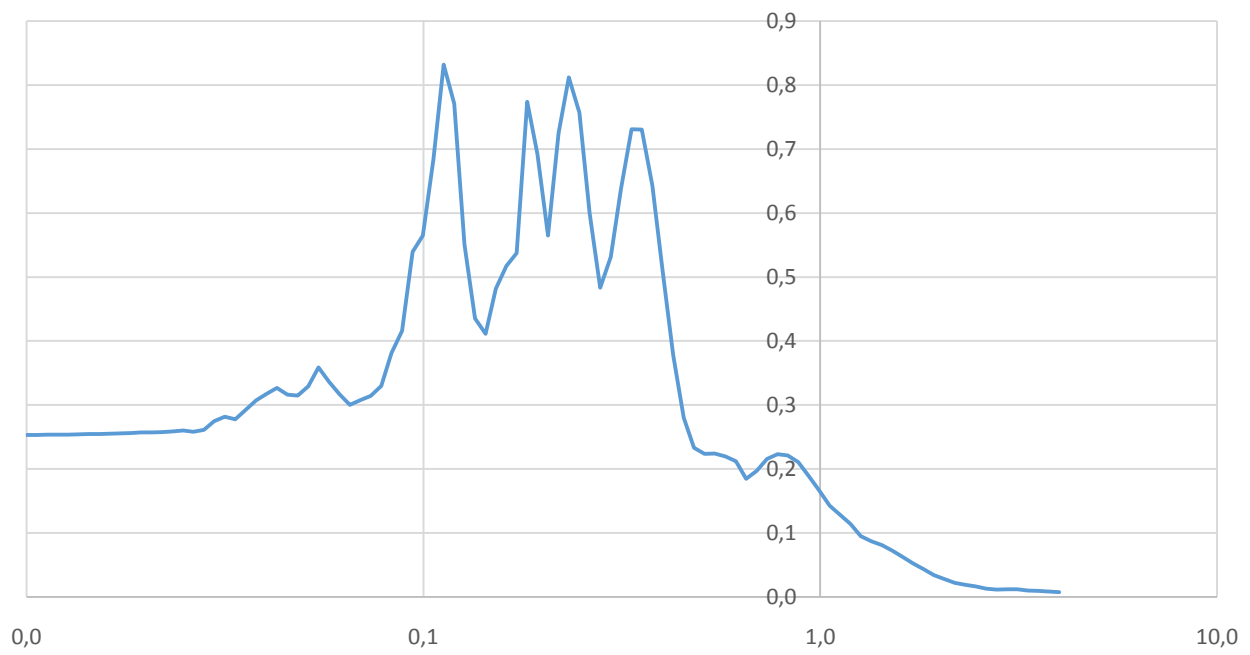
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 479



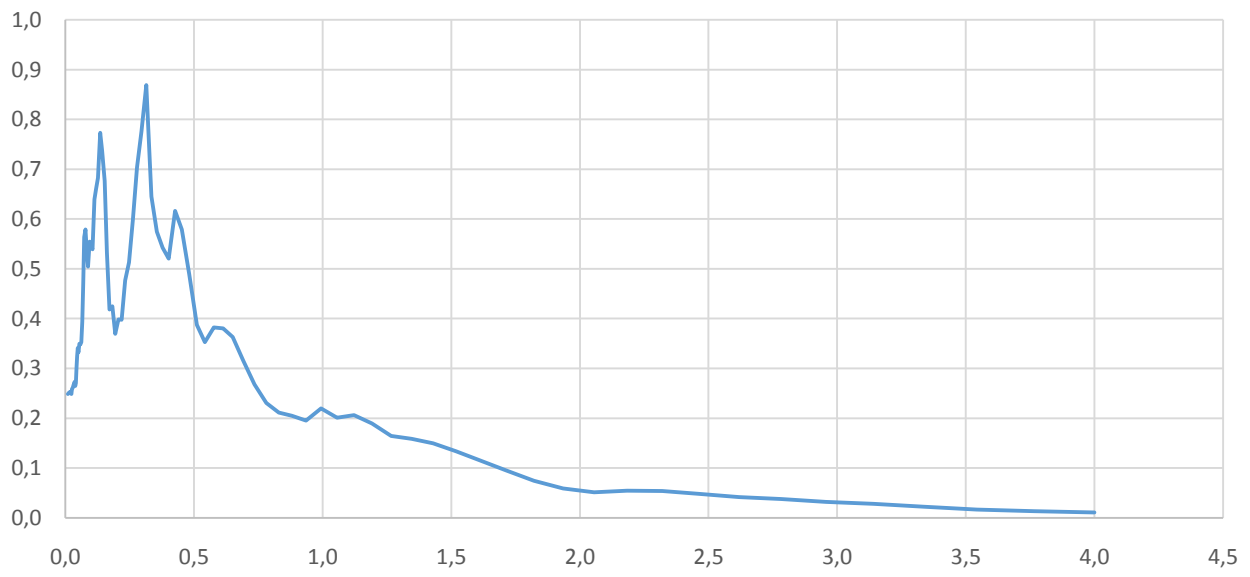
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 39



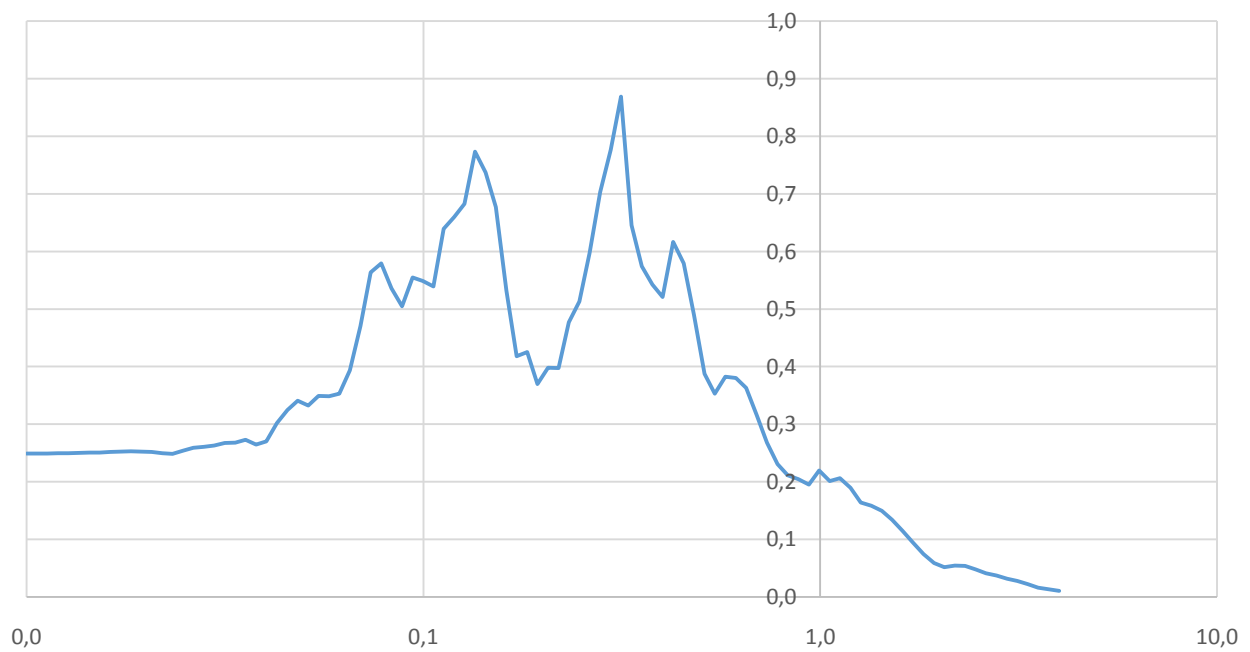
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 39



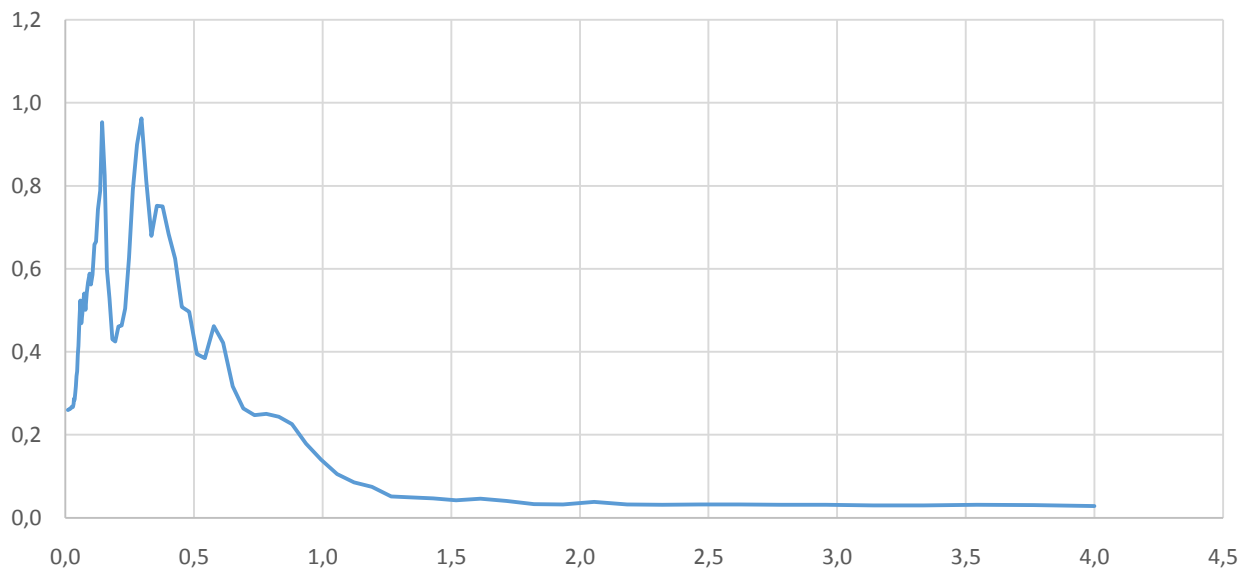
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 411



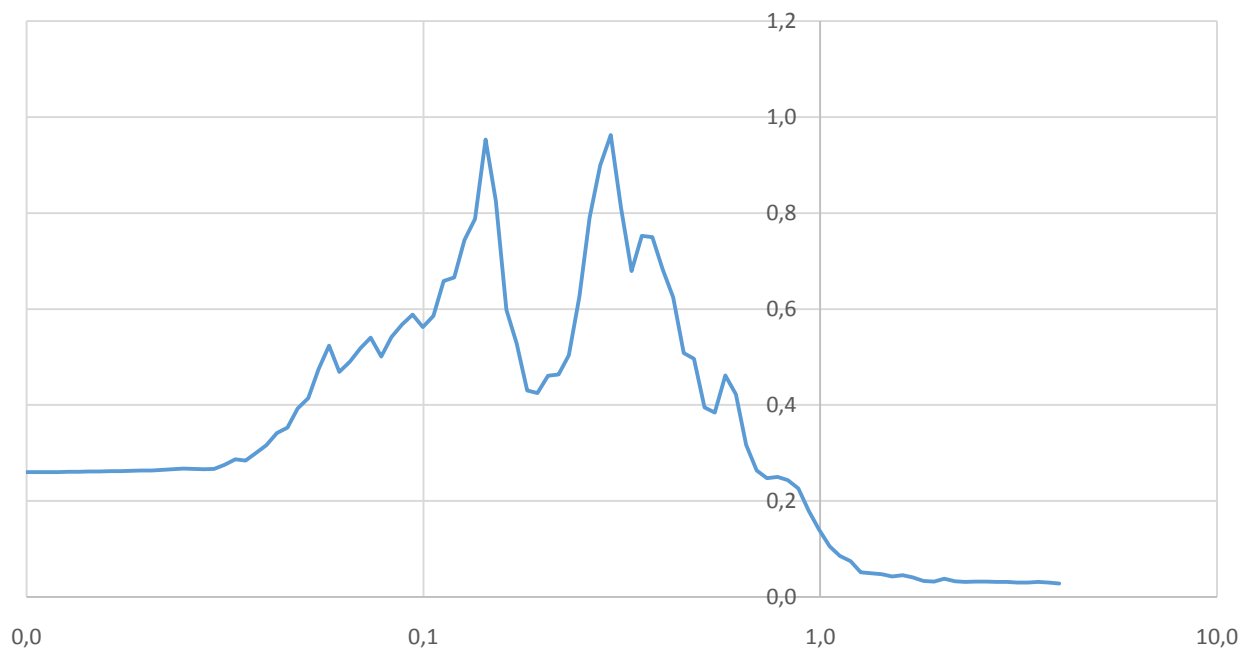
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 411



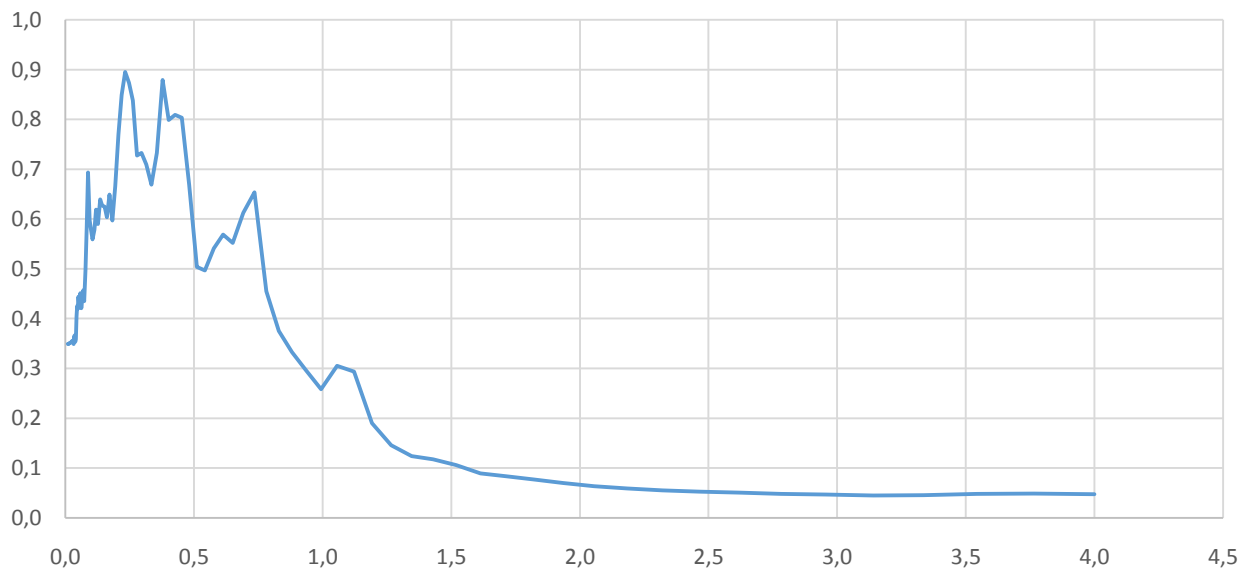
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 594



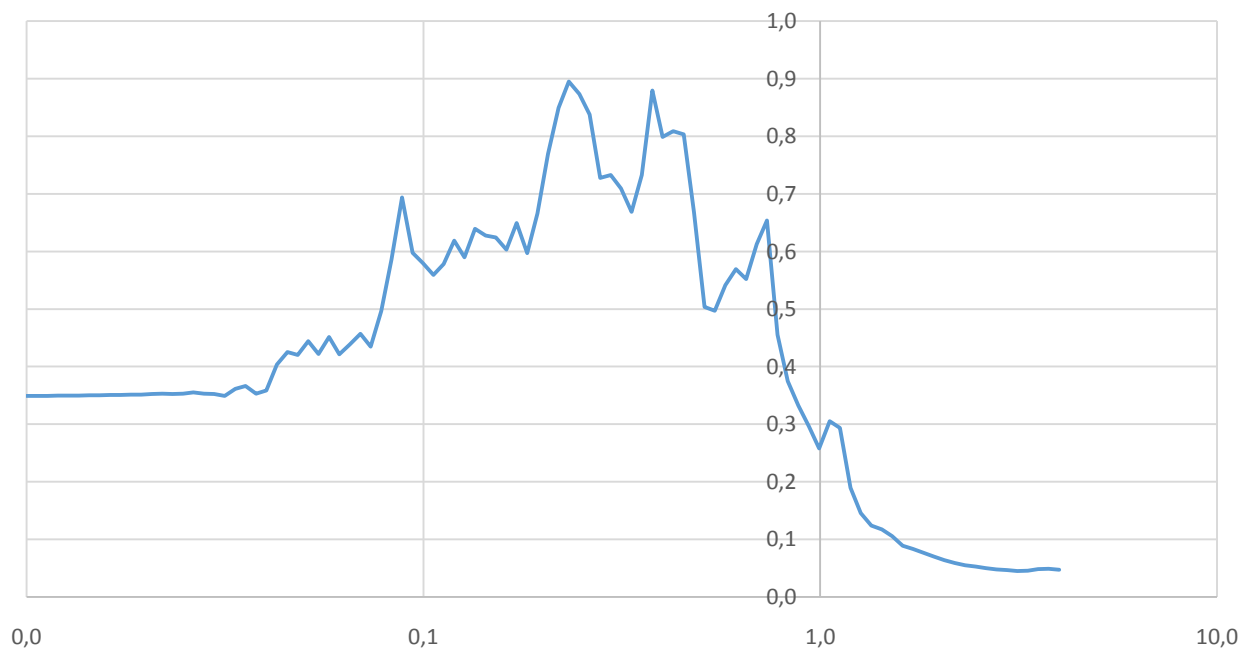
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 594



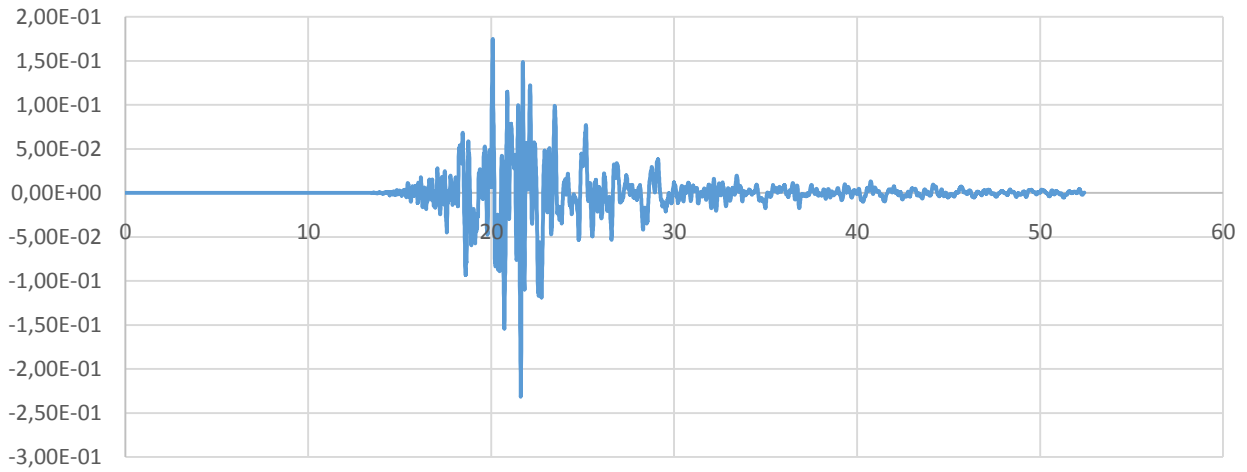
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 168



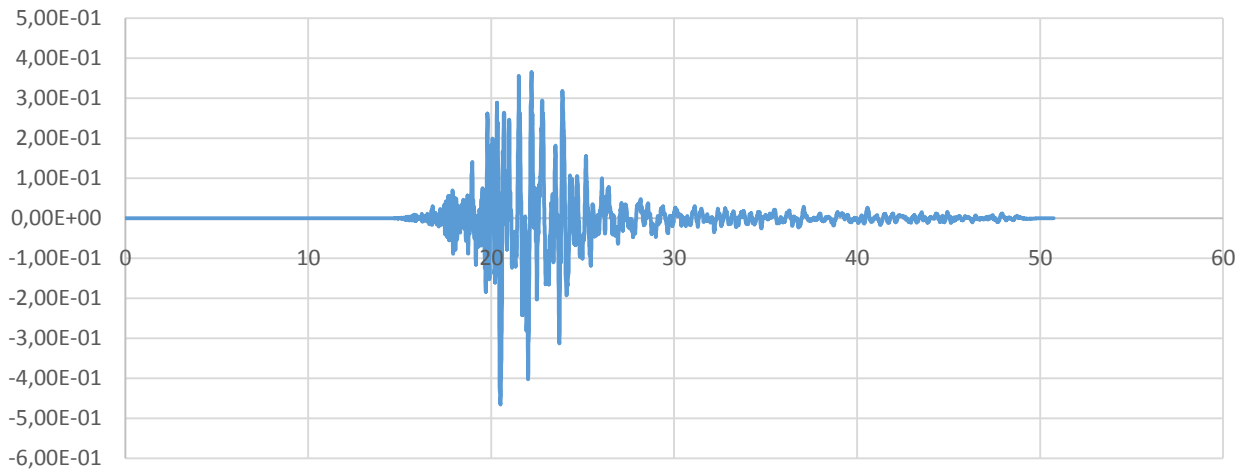
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 168



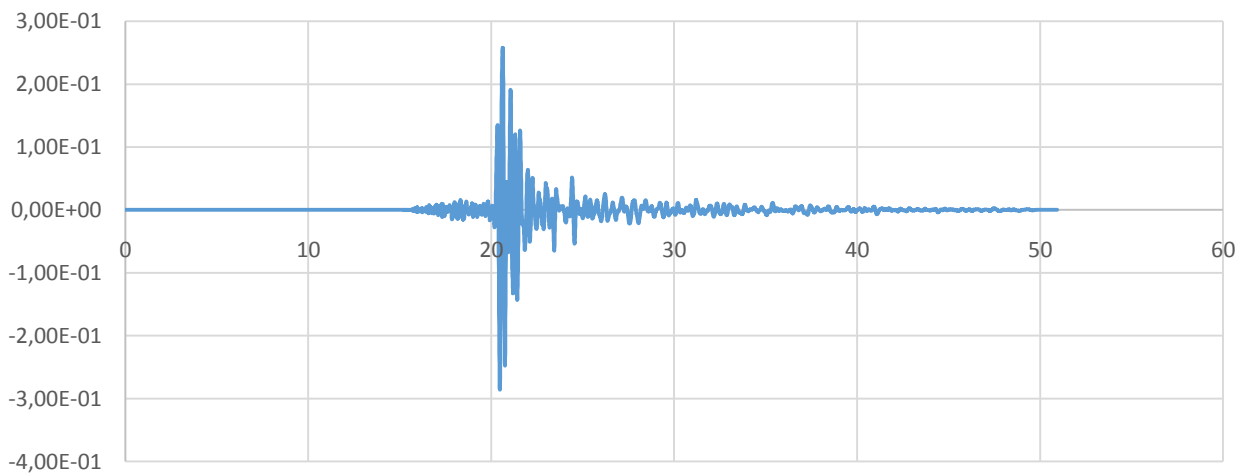
ACCELEROGRAMMA 1 / SCENARIO 477



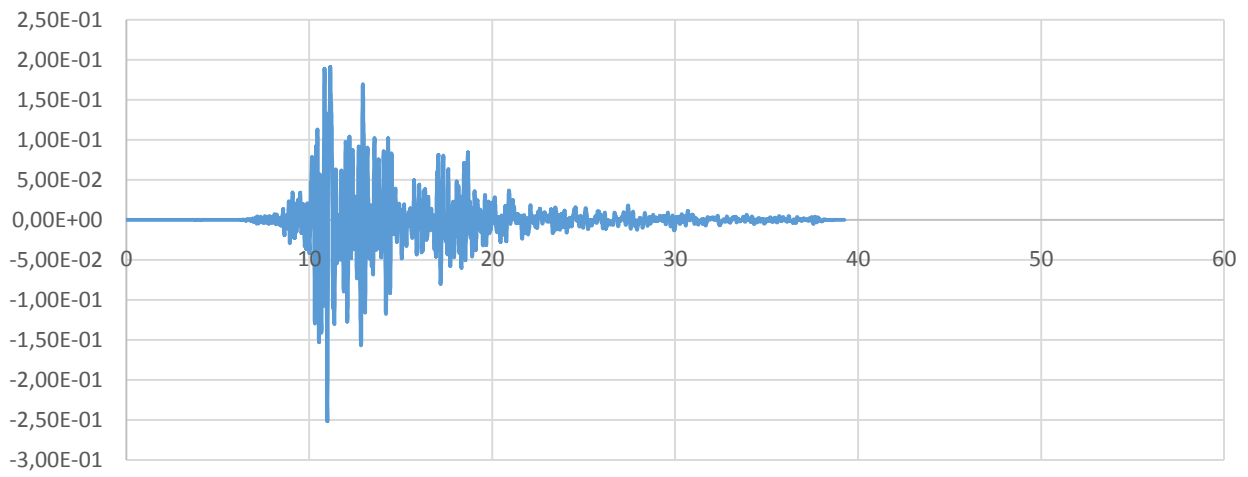
ACCELEROGRAMMA 2 / SCENARIO 310



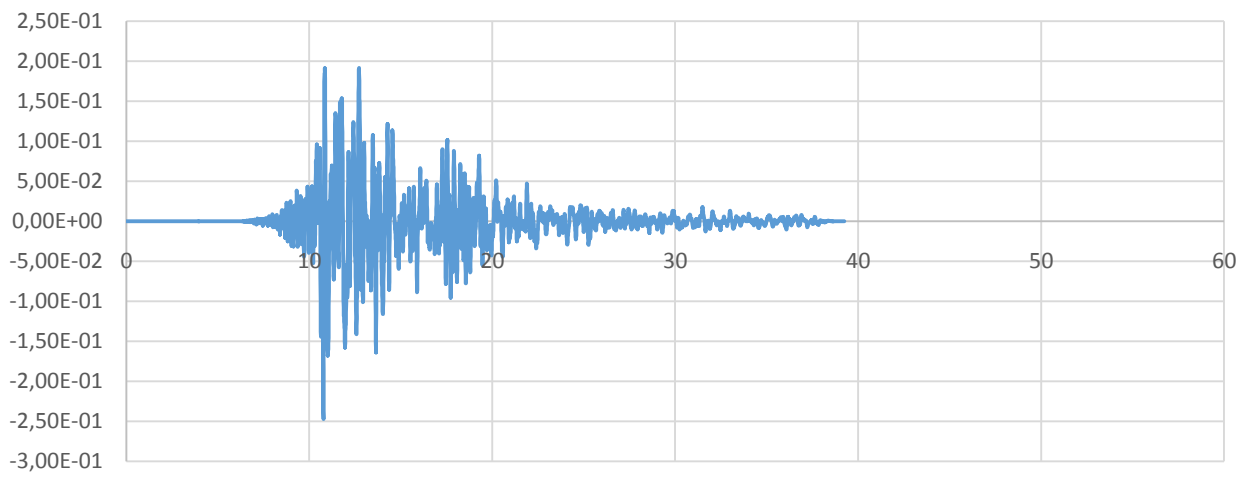
ACCELEROGRAMMA 3 / SCENARIO 479



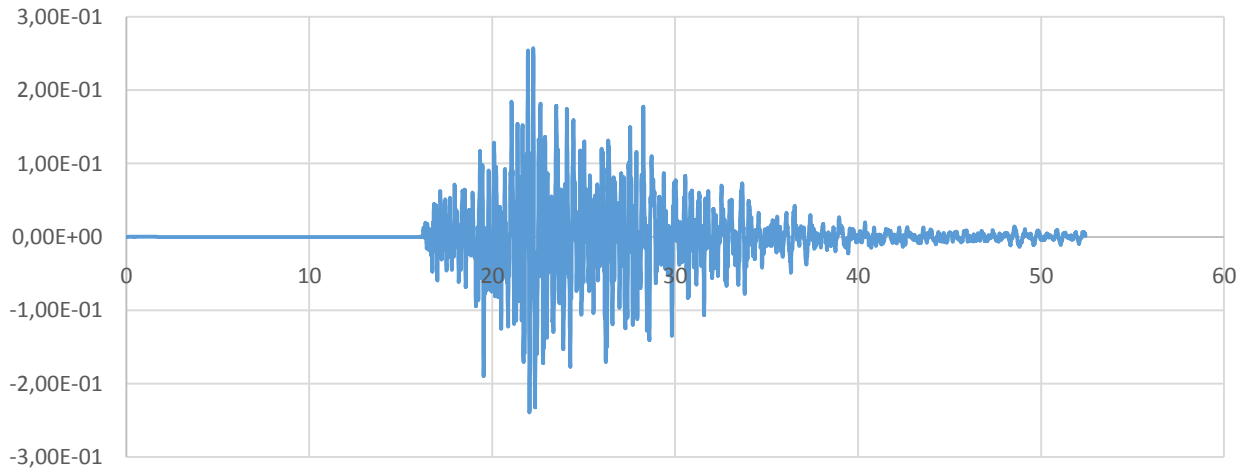
ACCELEROGRAMMA 4 / SCENARIO 39



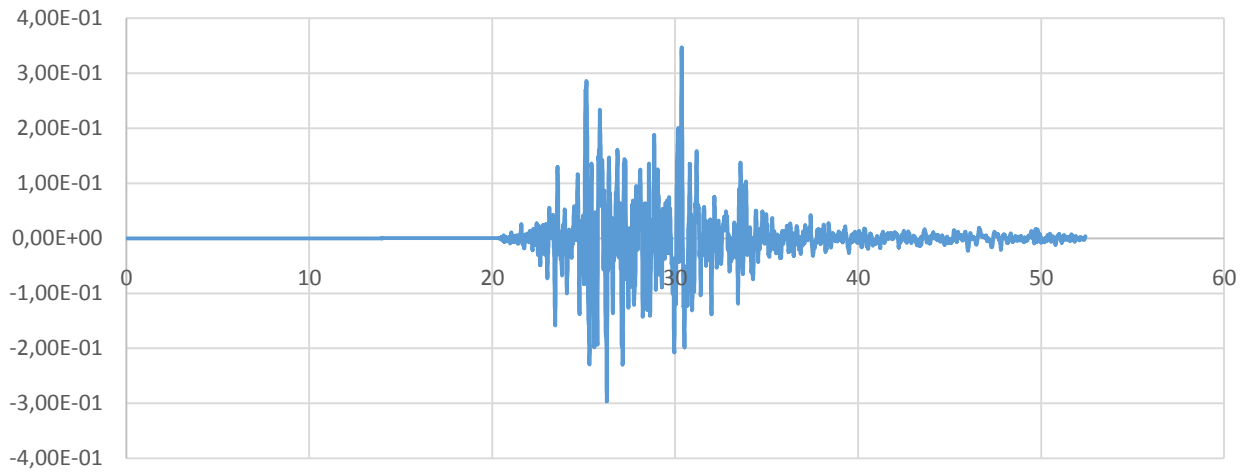
ACCELEROGRAMMA 5 / SCENARIO 411



ACCELEROGRAMMA 6 / SCENARIO 594



ACCELEROGRAMMA 7 / SCENARIO 168



5. MOPS 2005

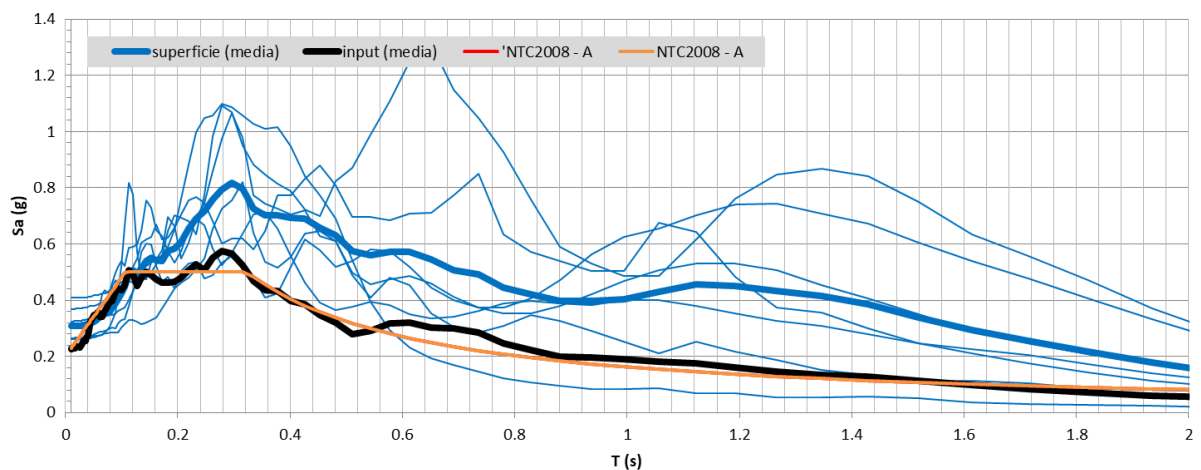
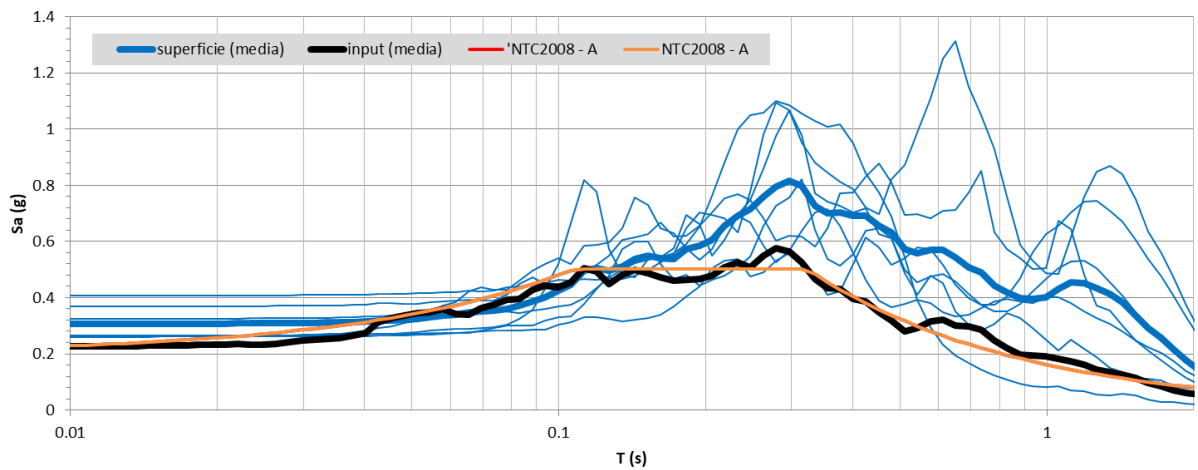
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.49	1.91	2.09
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.24	1.49	1.80
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.70	1.91	2.15
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.84	2.09	2.38

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

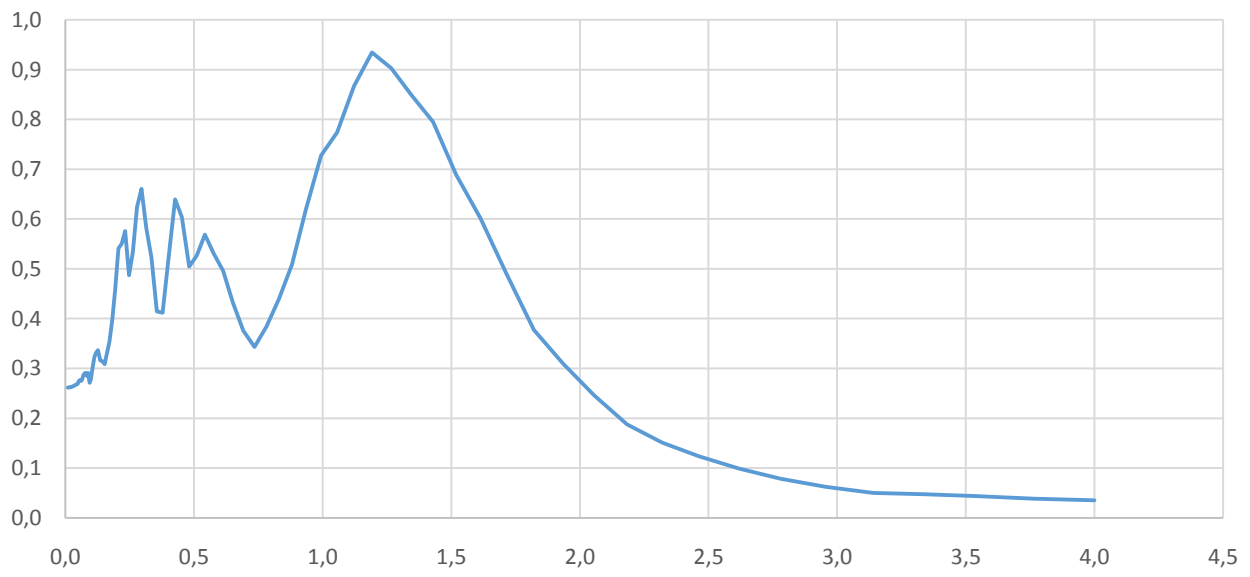
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

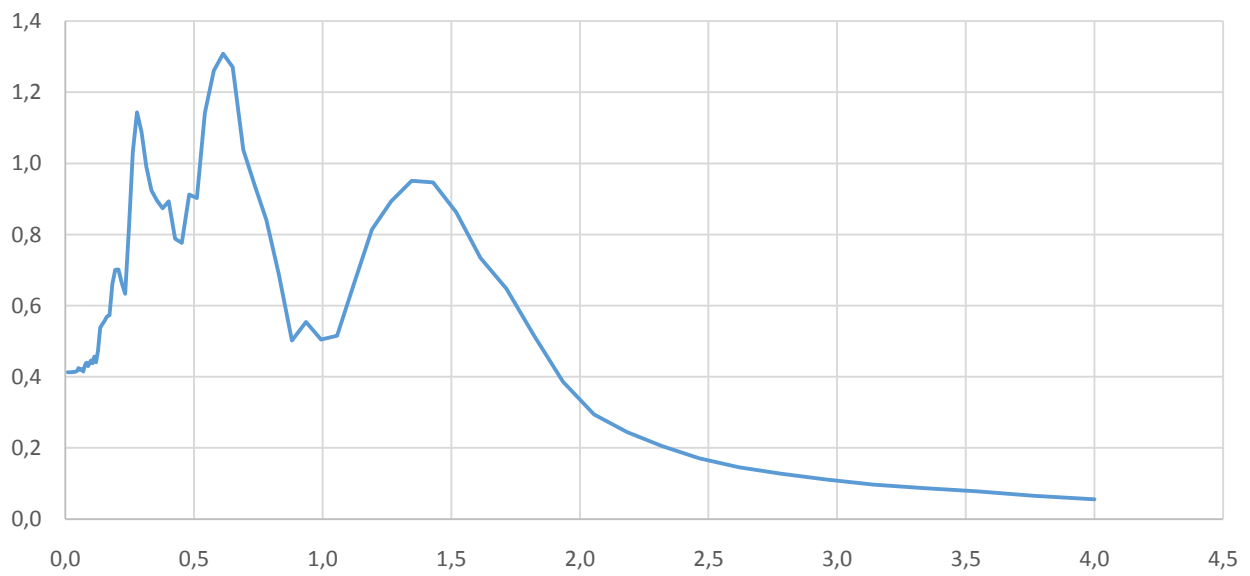
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



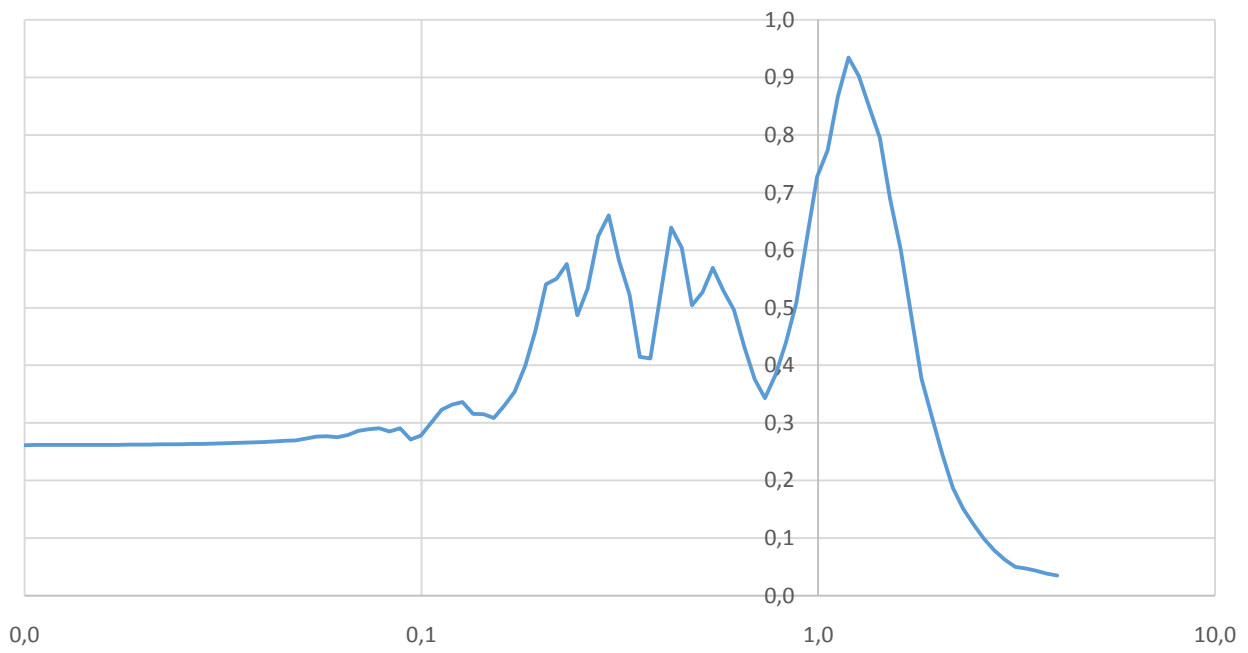
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 309



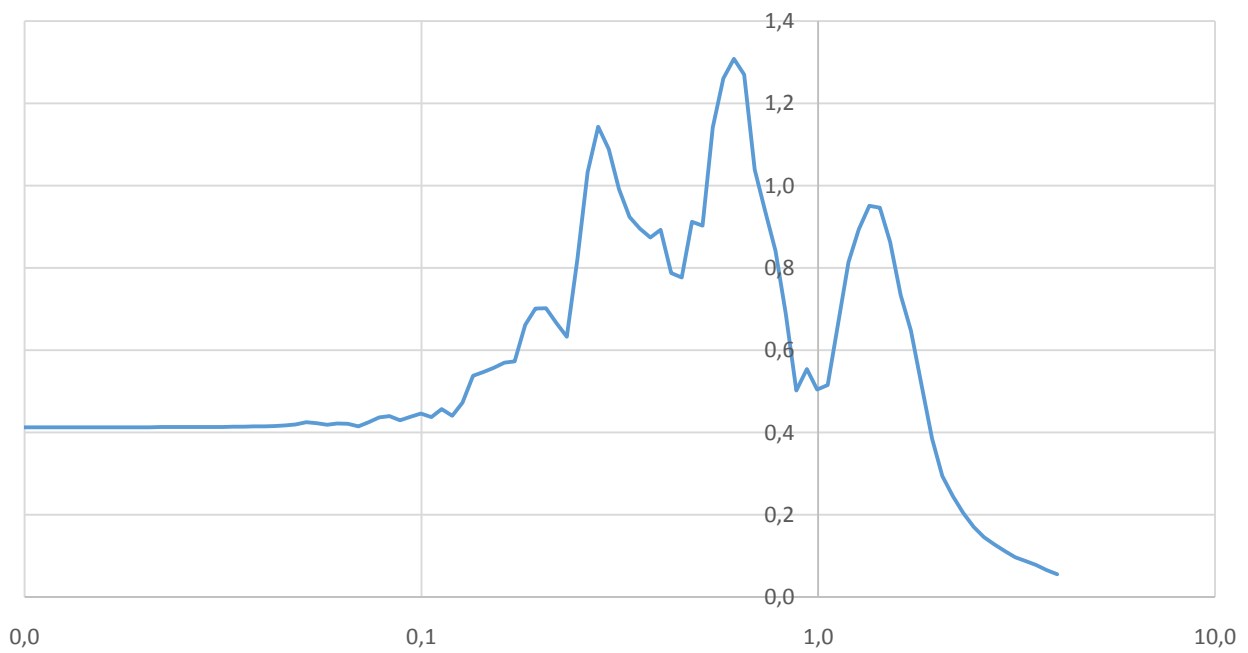
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 415



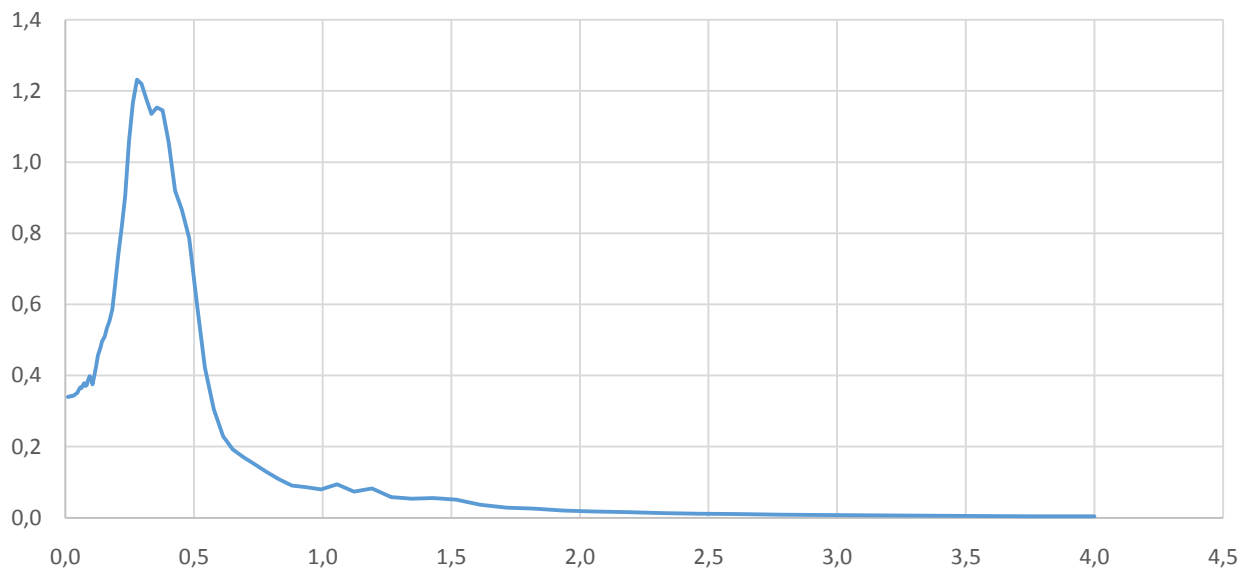
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 309



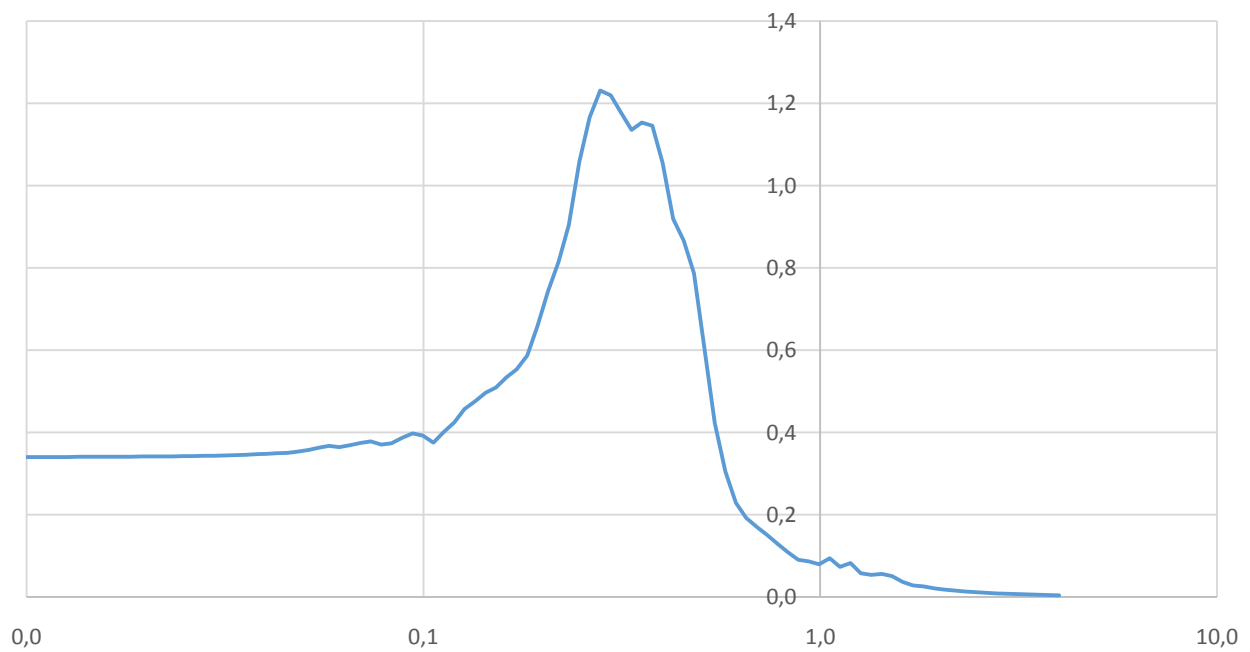
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 415



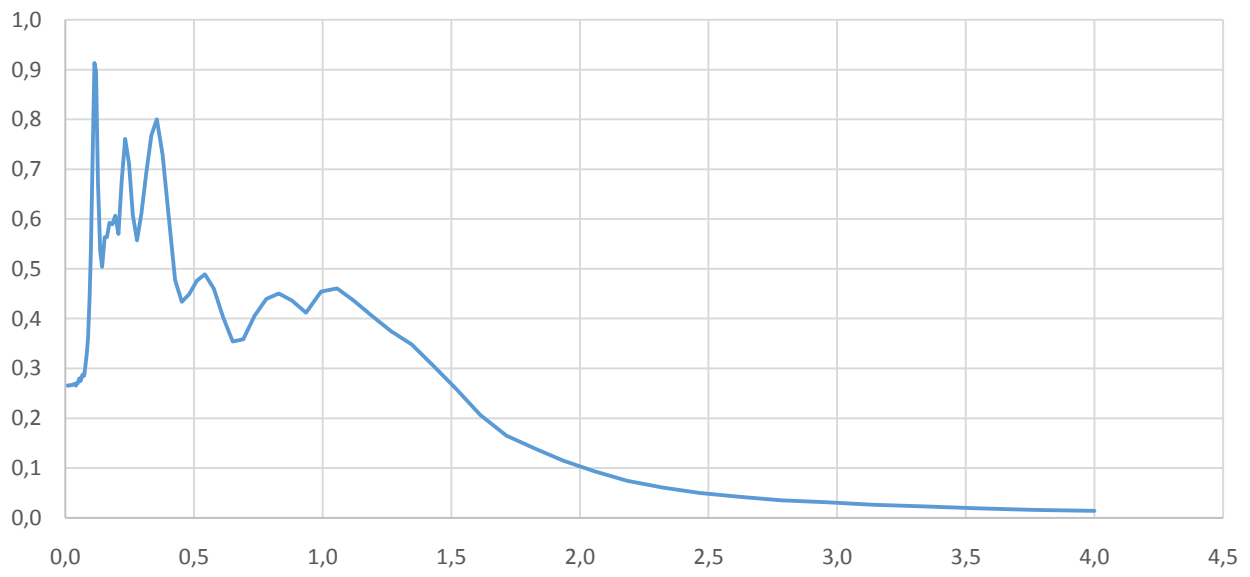
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 661



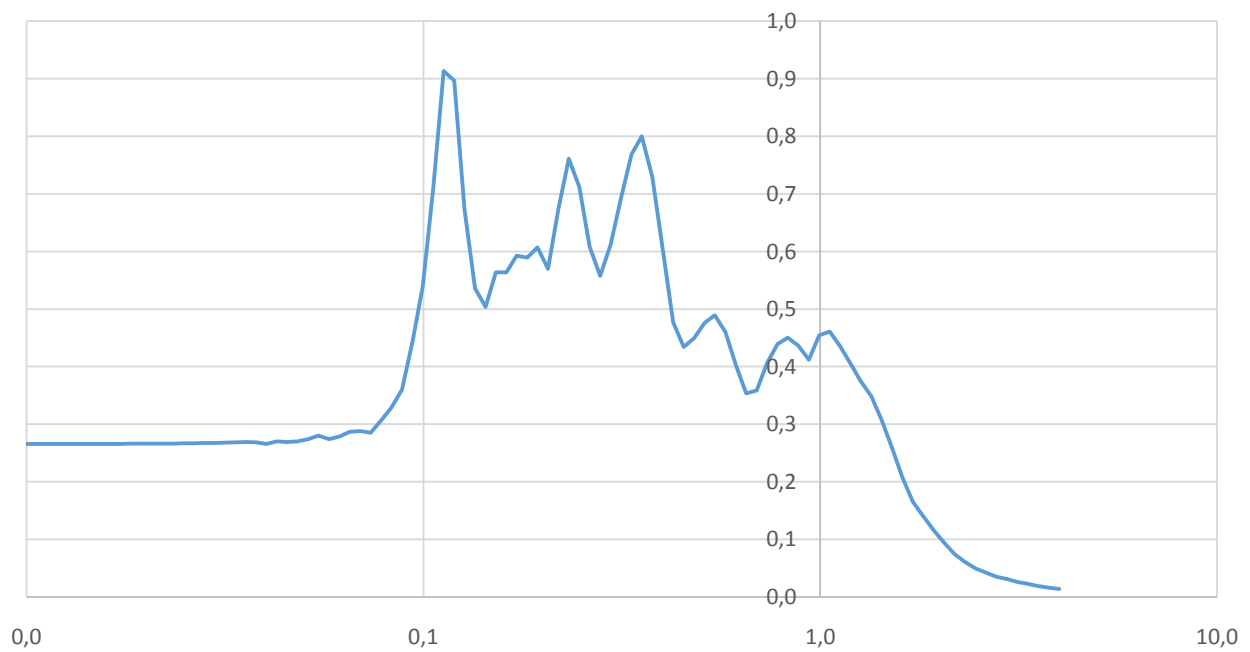
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 661



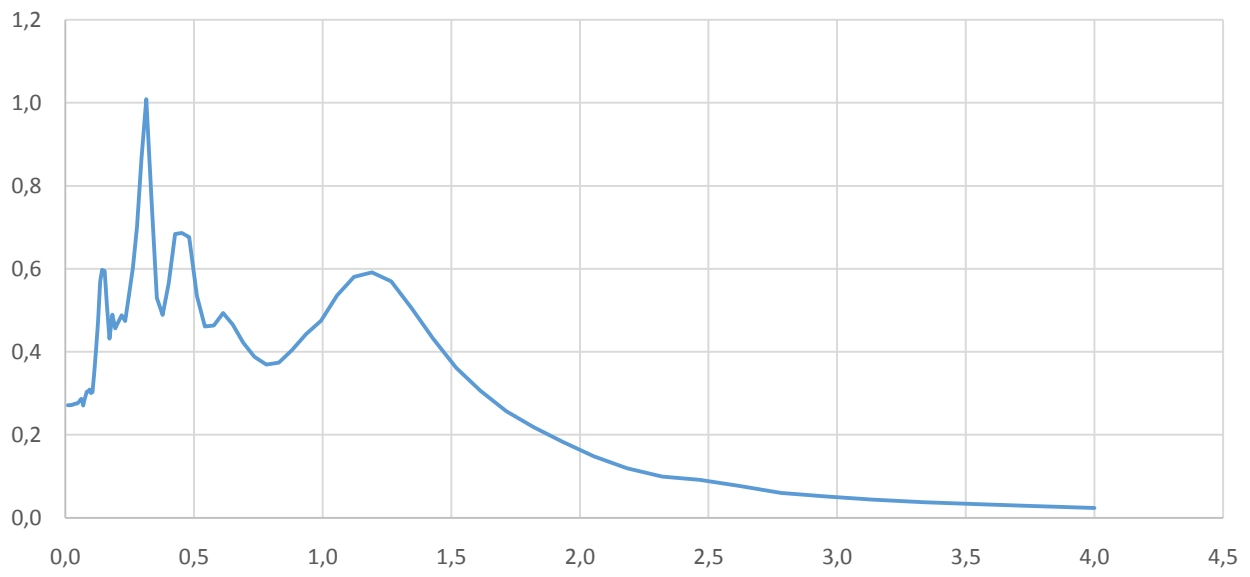
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 403



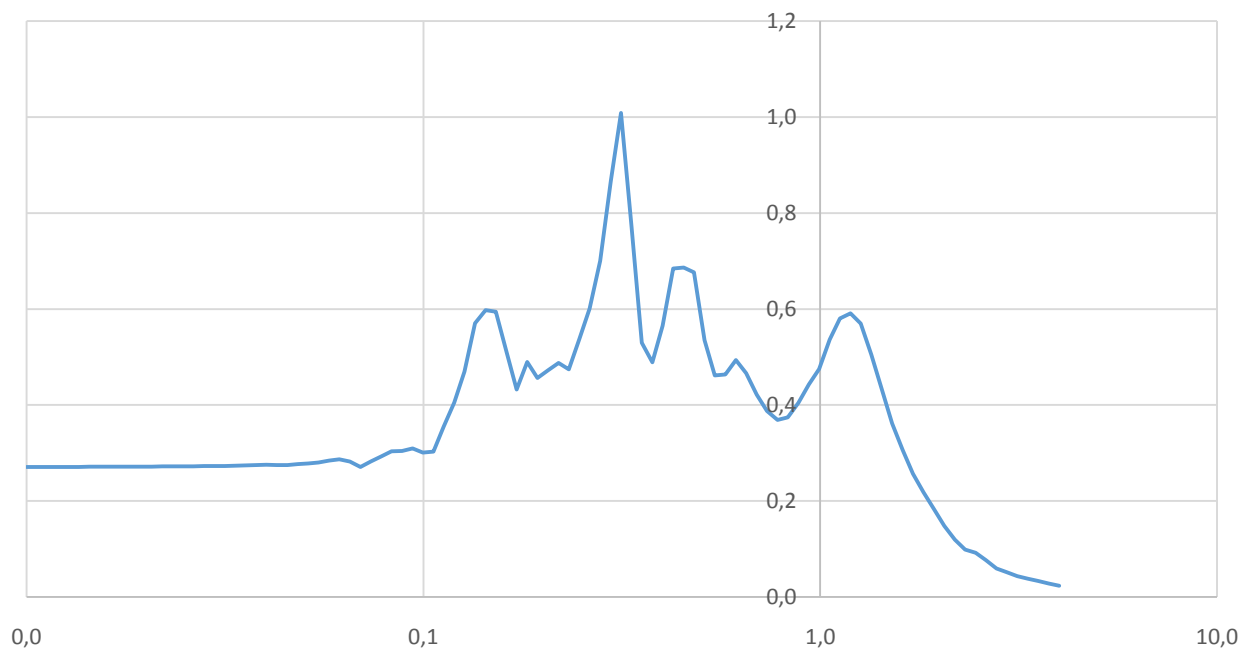
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 403



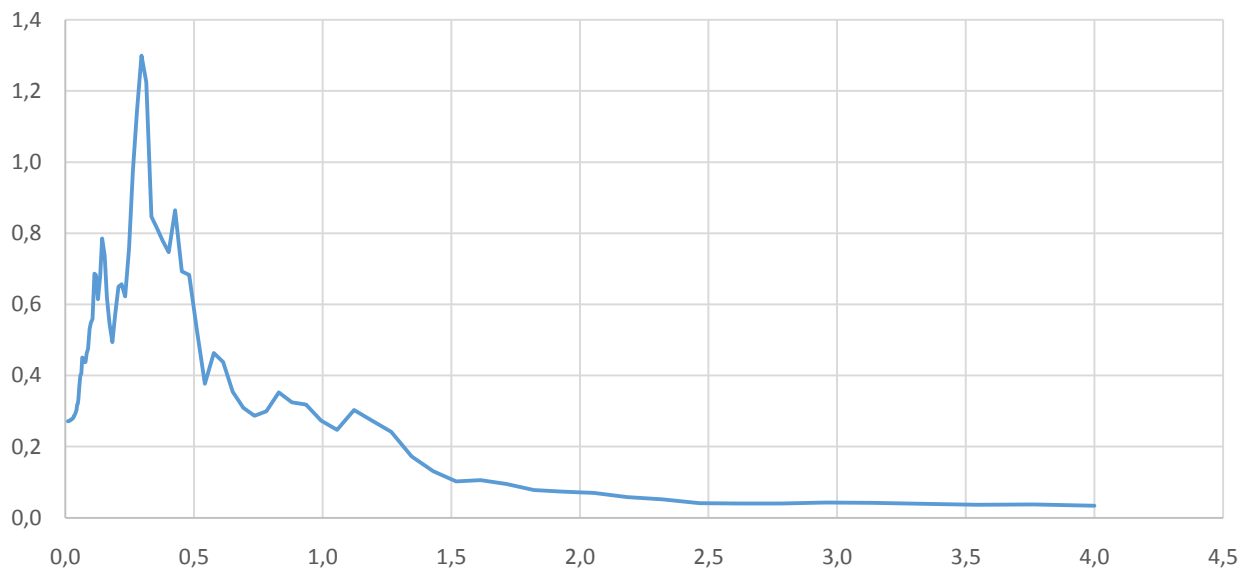
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 663



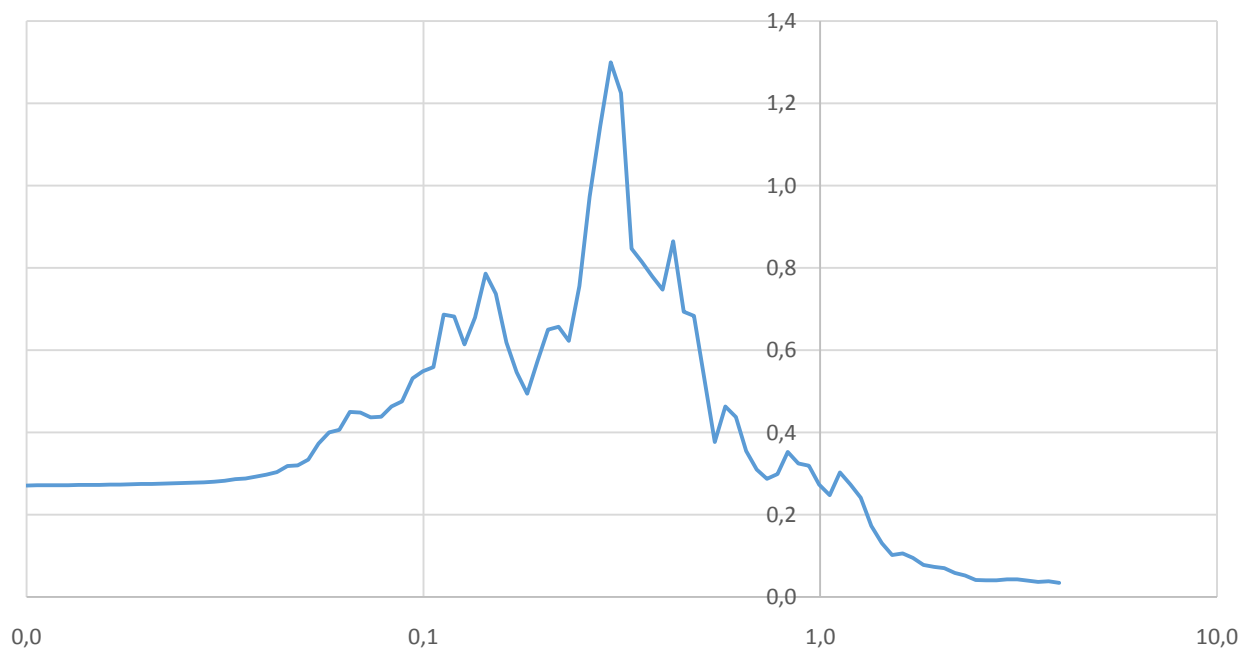
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 663



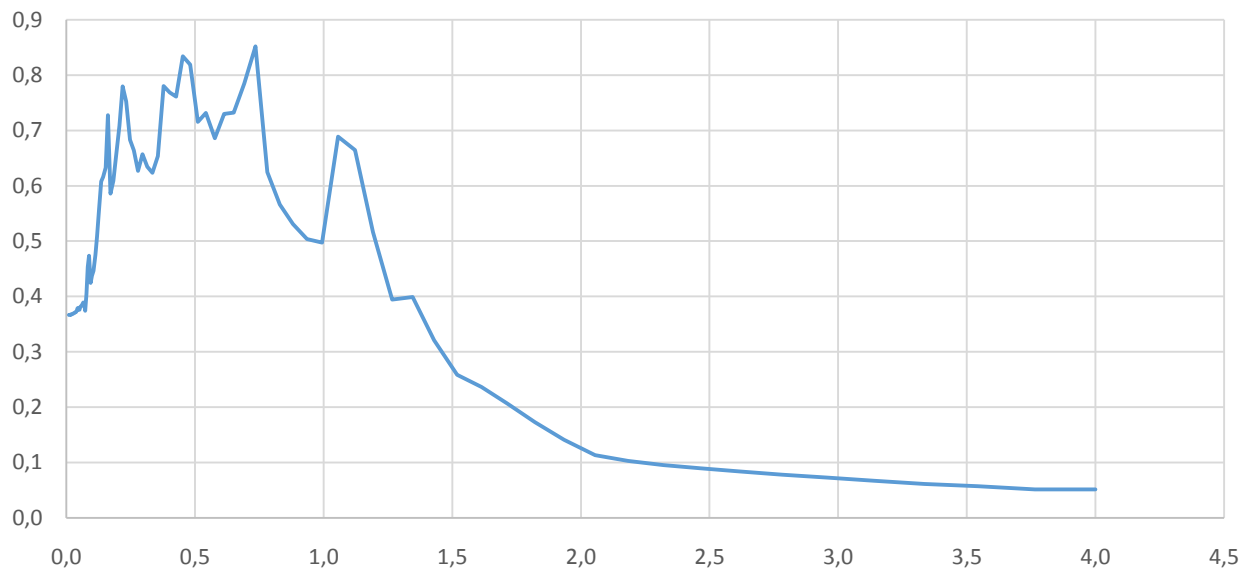
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 664



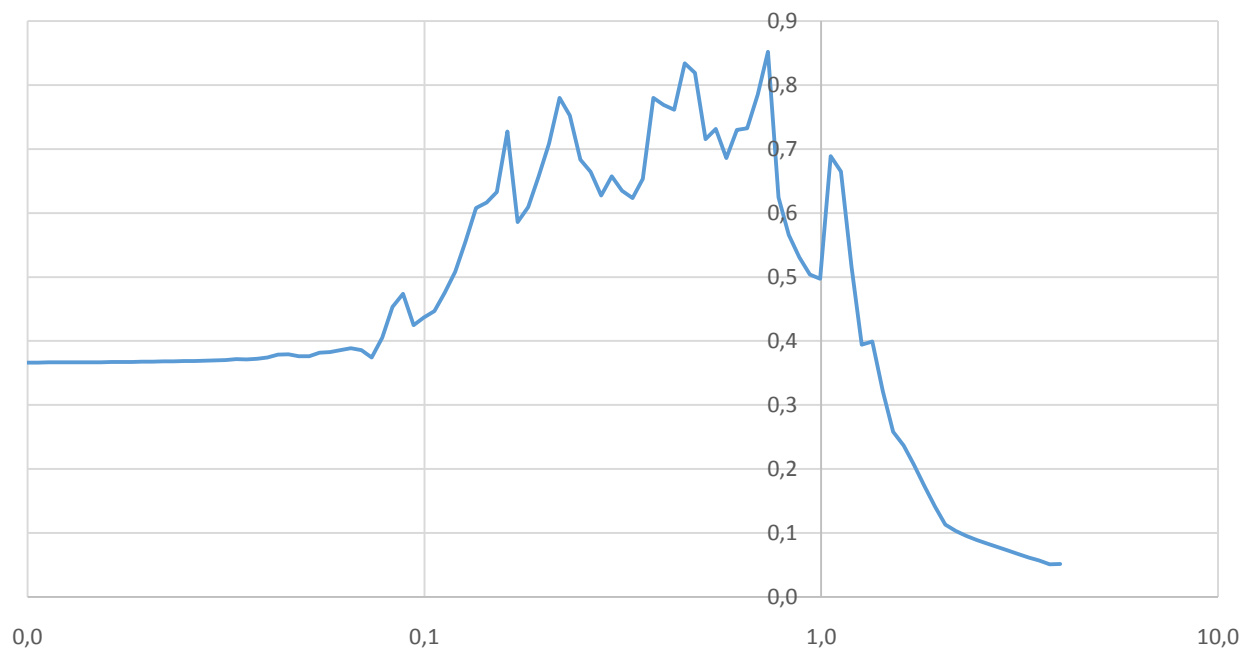
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 664



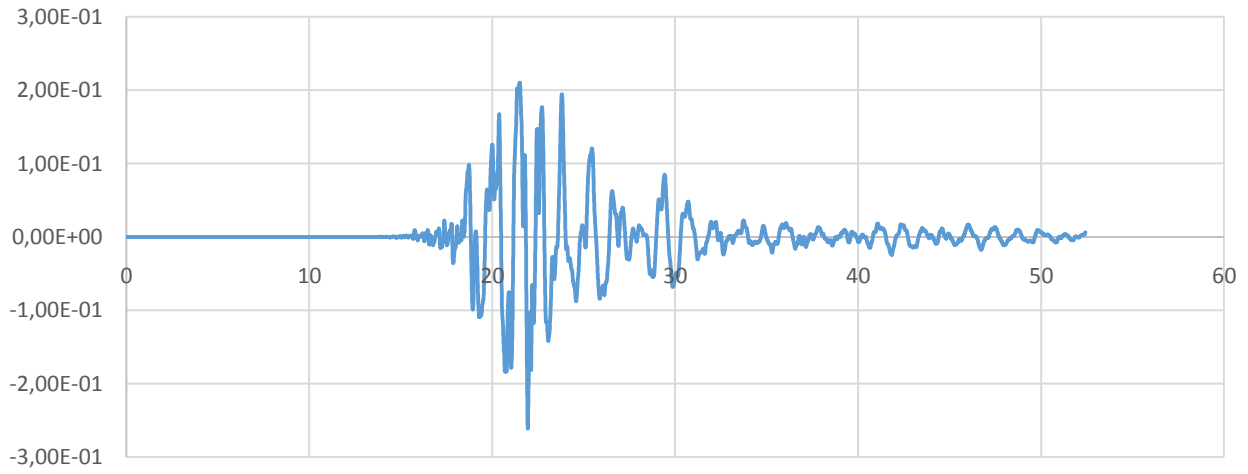
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 665



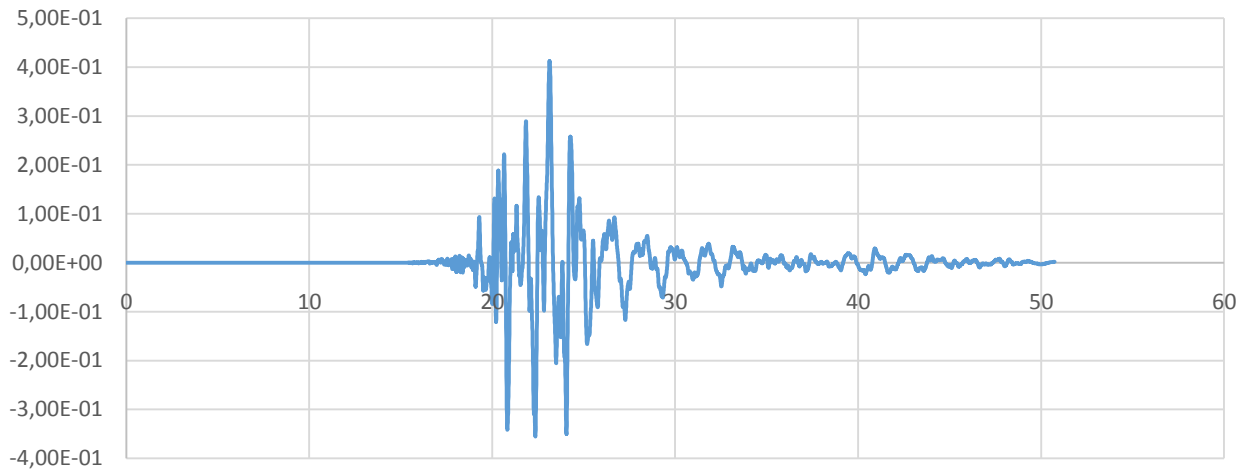
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 665



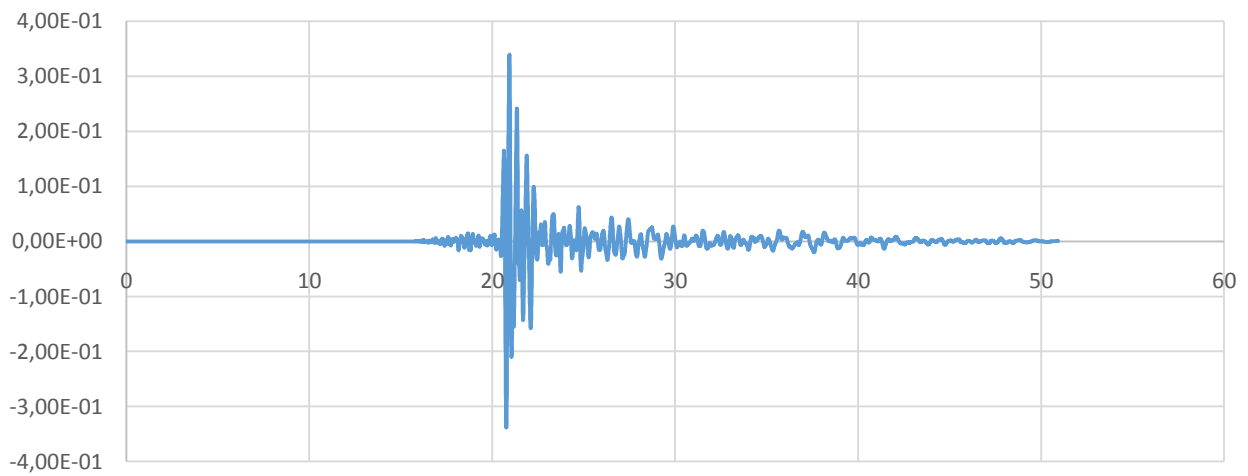
ACCELEROGRAMMA 1 / SCENARIO 309



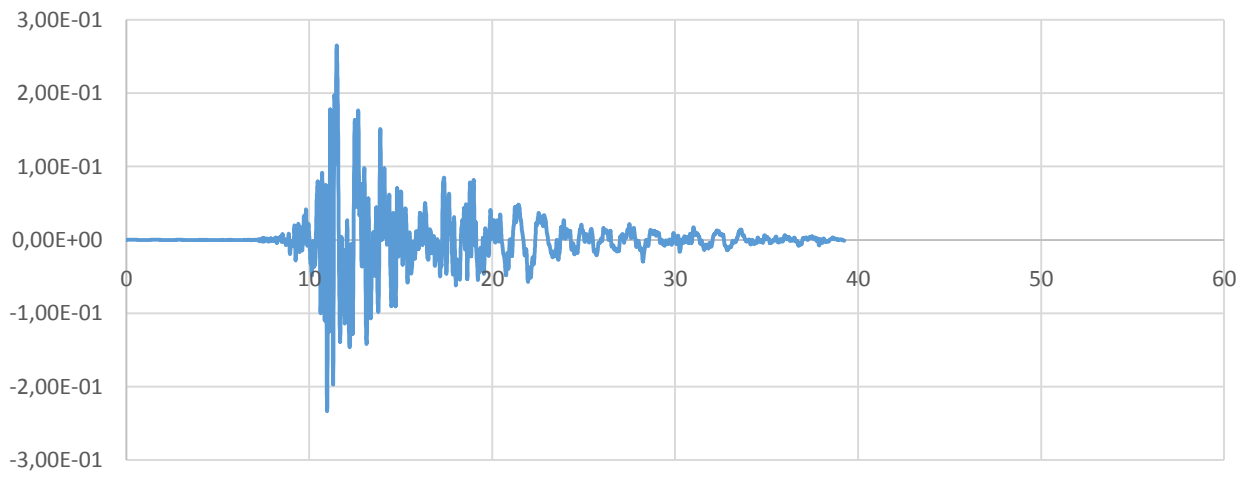
ACCELEROGRAMMA 2 / SCENARIO 415



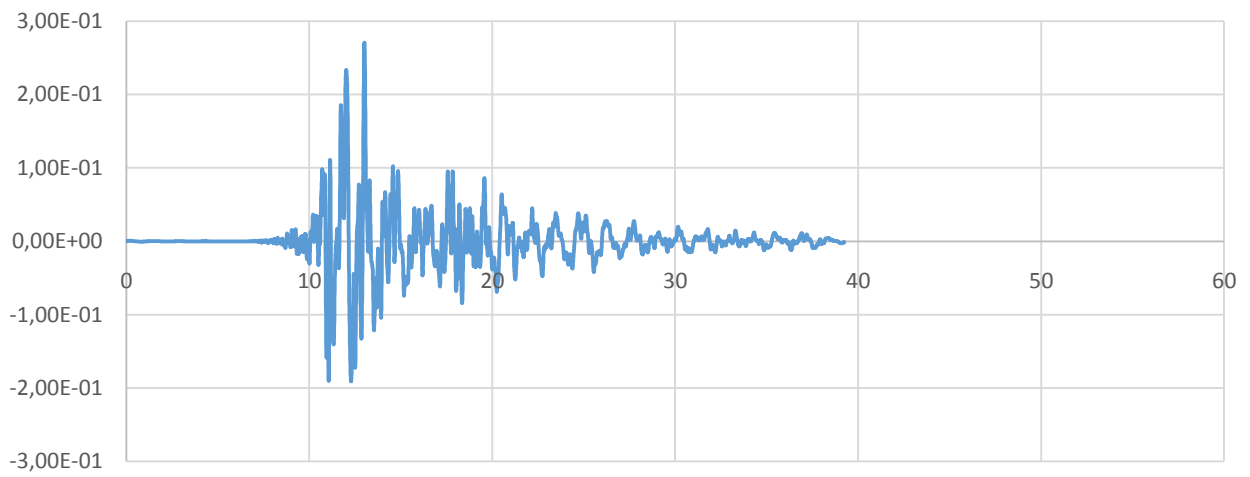
ACCELEROGRAMMA 3 / SCENARIO 661



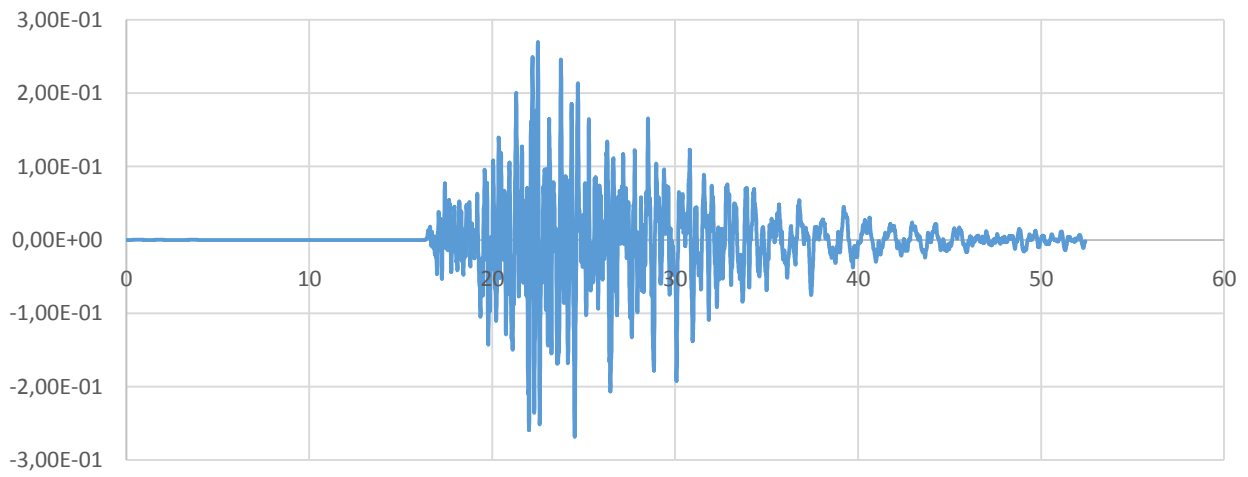
ACCELEROGRAMMA 4 / SCENARIO 403



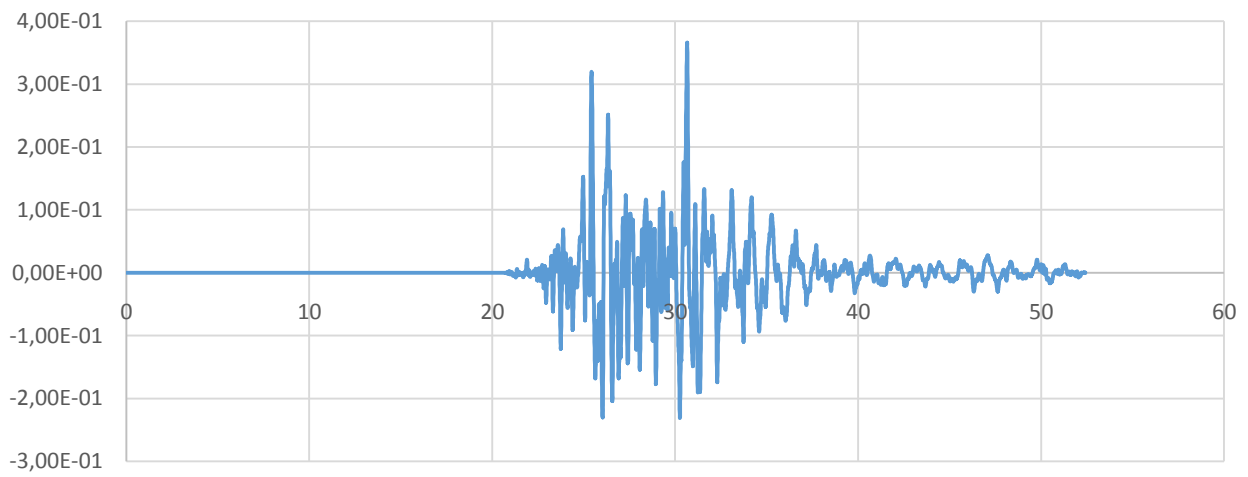
ACCELEROGRAMMA 5 / SCENARIO 663



ACCELEROGRAMMA 6 / SCENARIO 664



ACCELEROGRAMMA 7 / SCENARIO 665



6. MOPS 2006

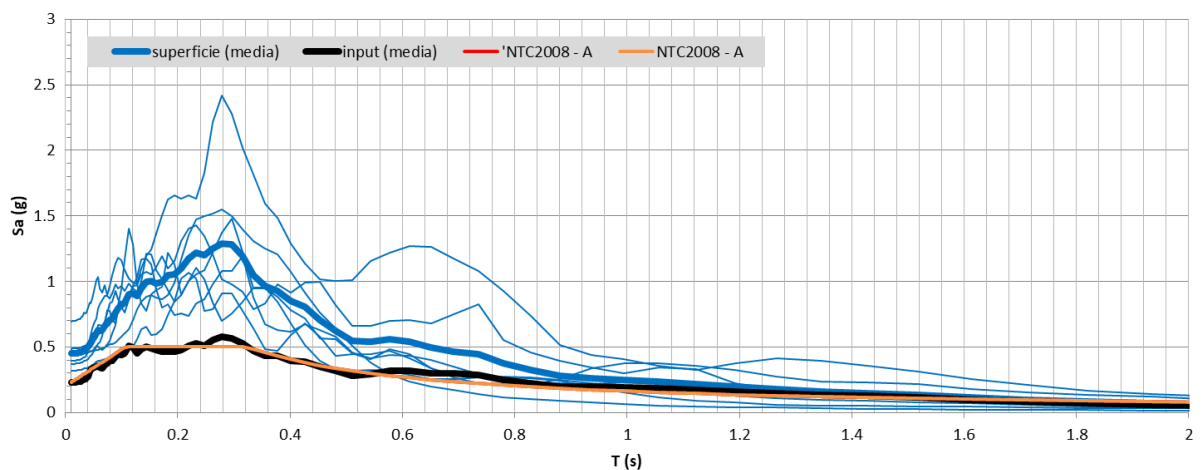
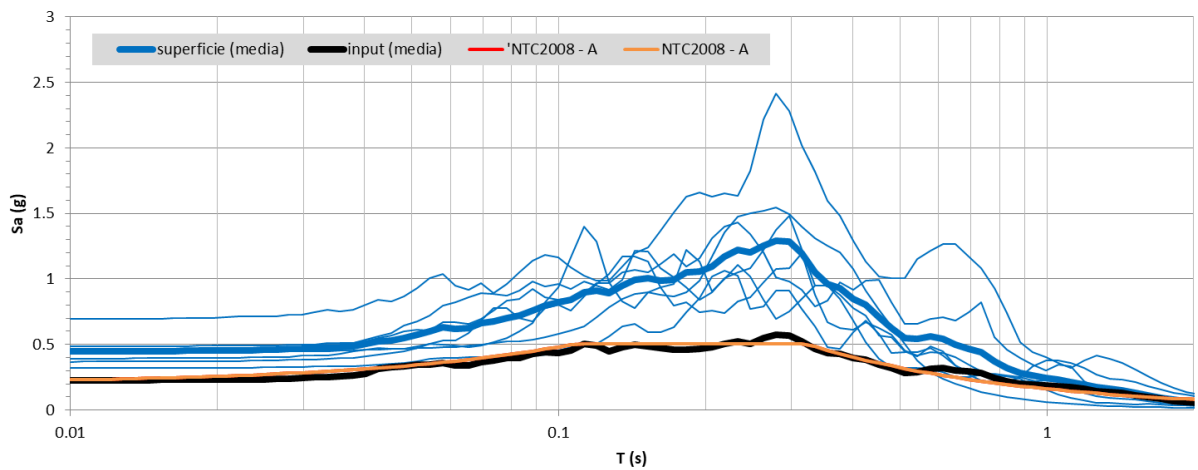
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
2.17	1.78	1.45
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
2.06	2.17	2.30
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.63	1.78	1.95
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.24	1.45	1.70

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

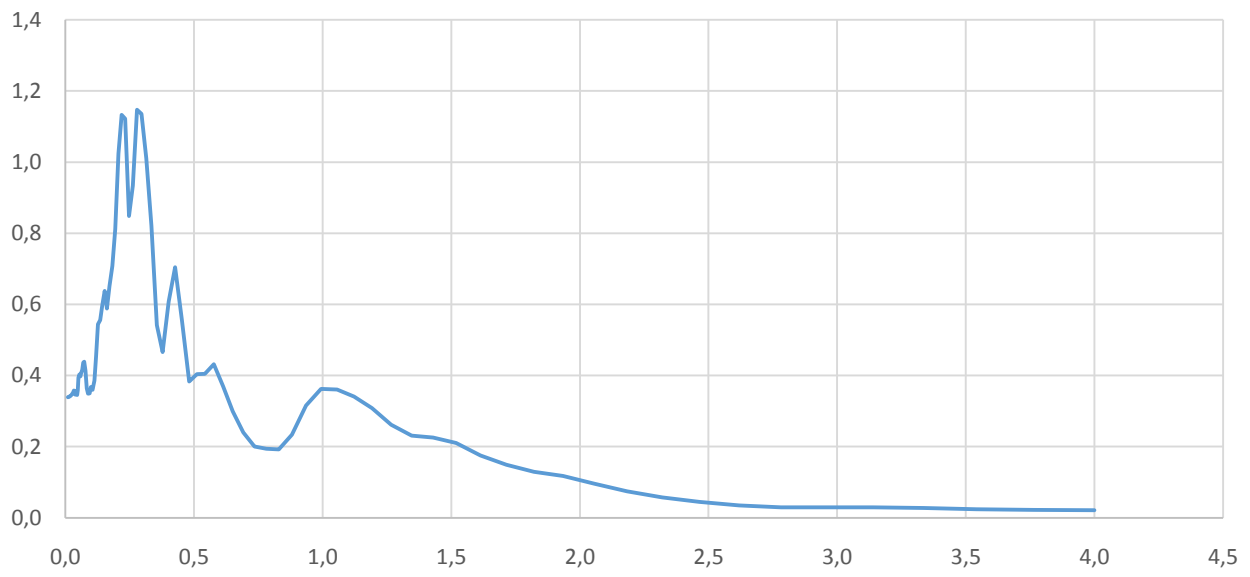
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

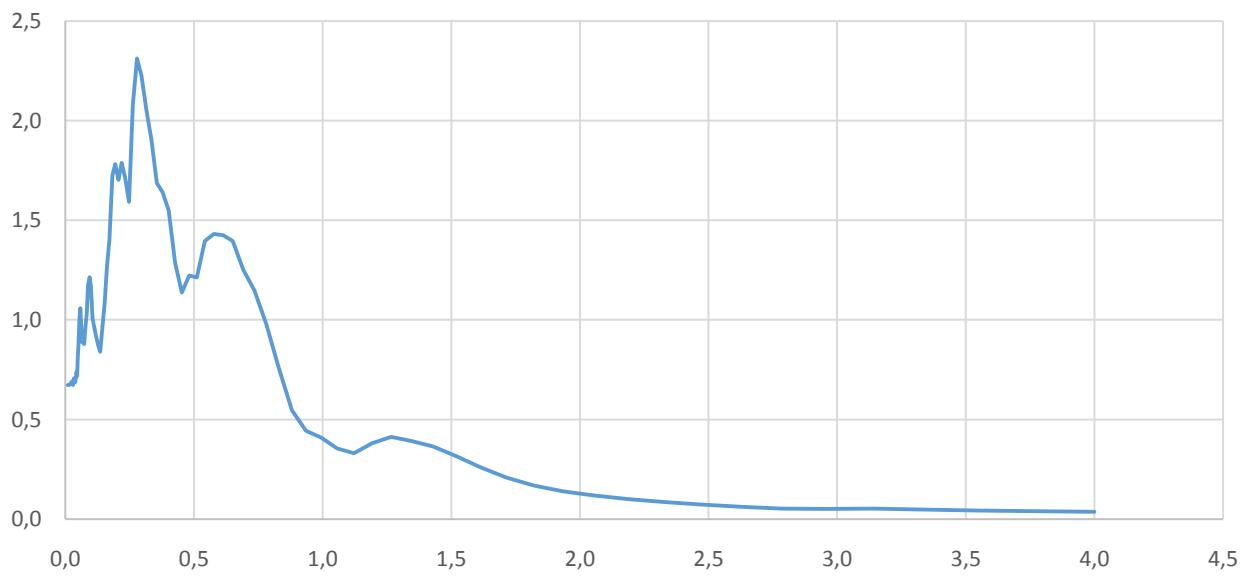
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



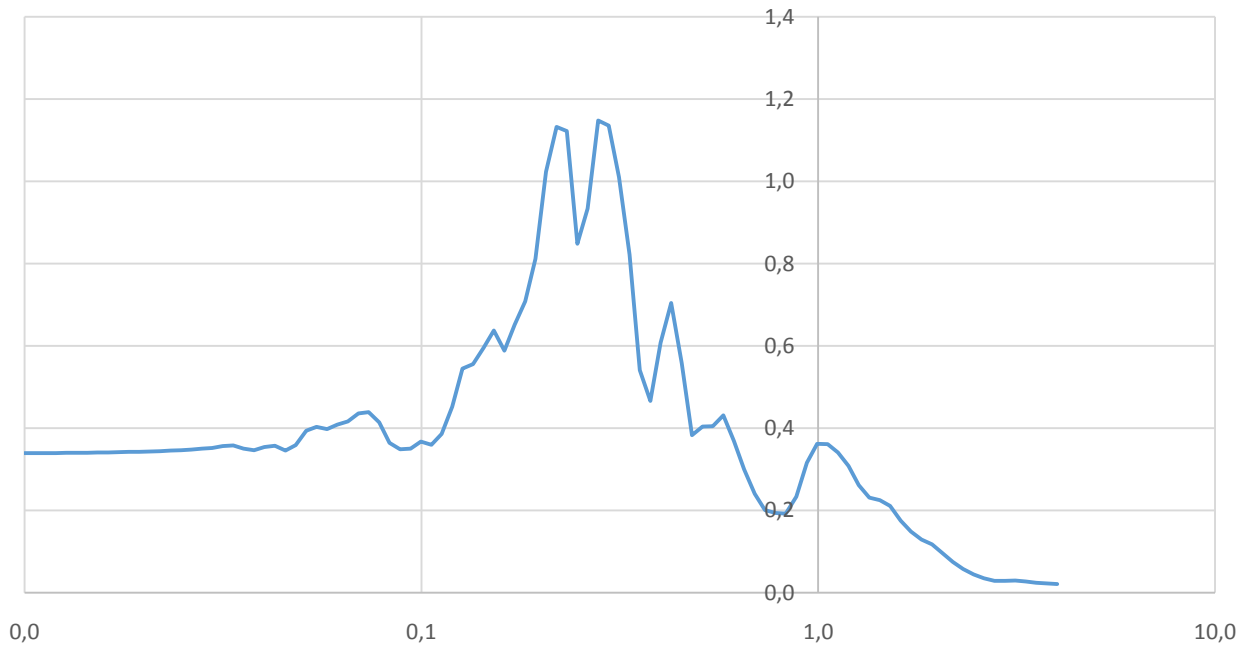
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 169



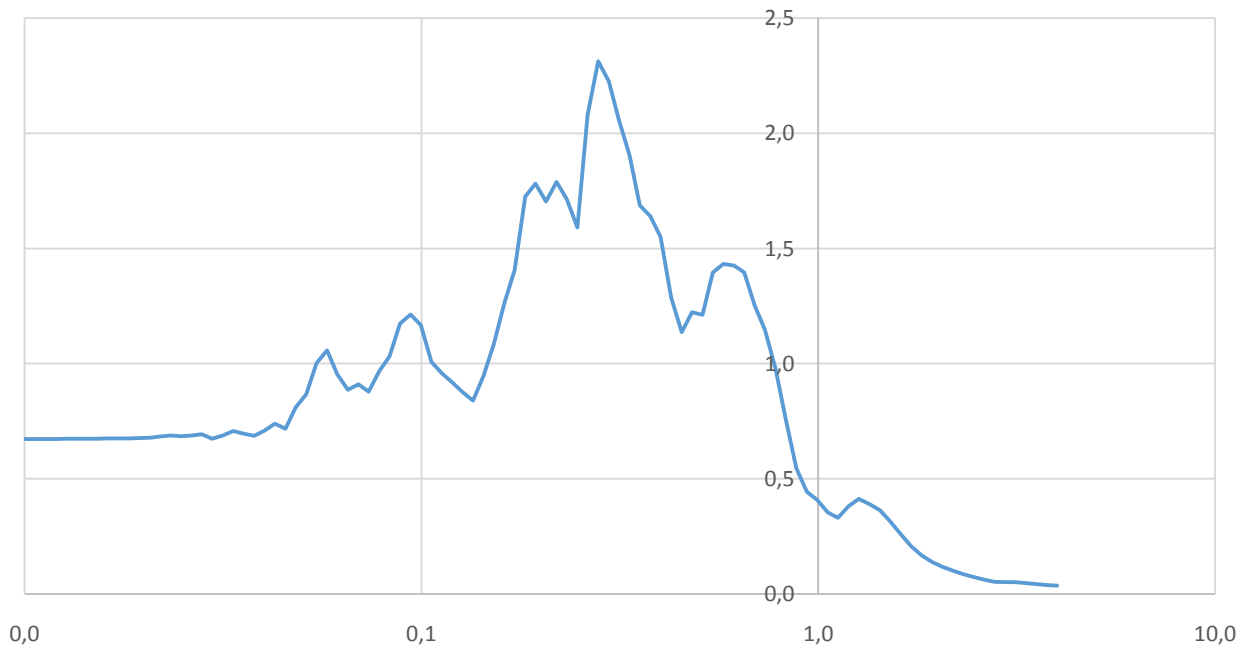
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 625



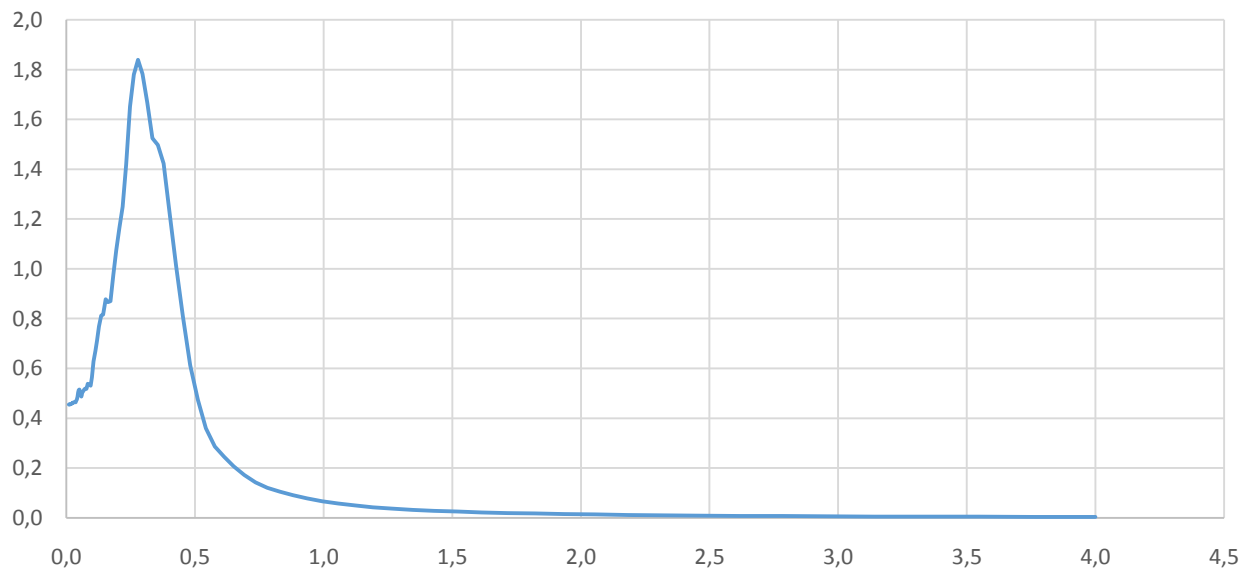
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 169



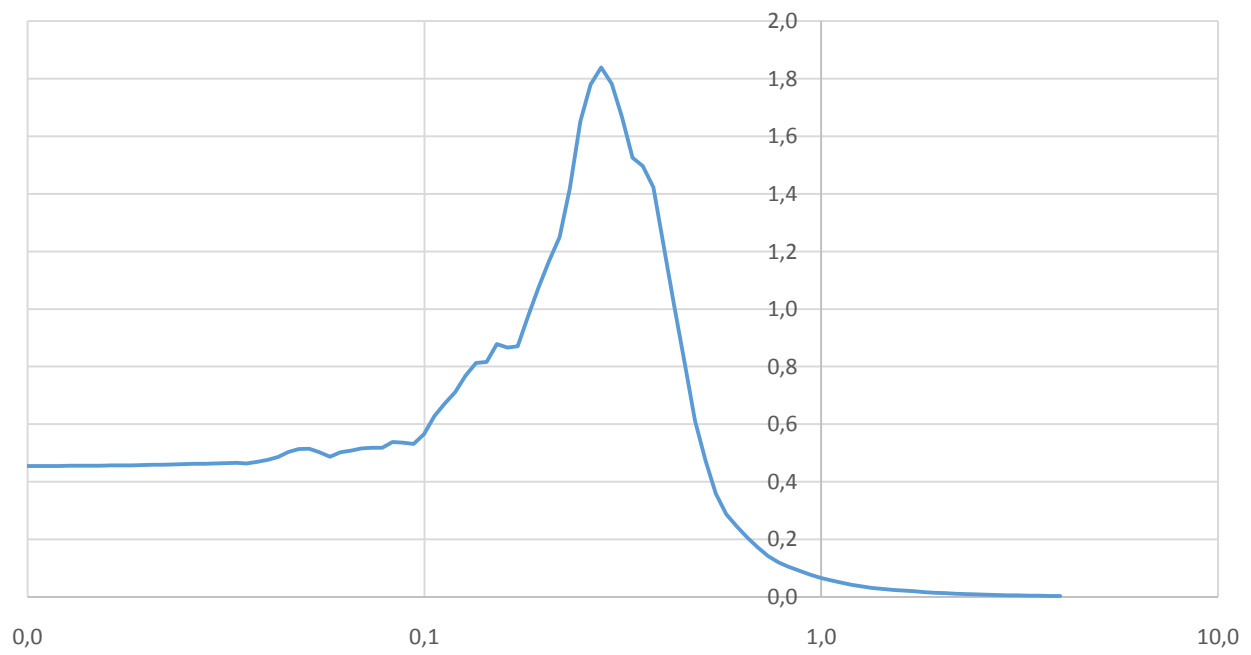
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 625



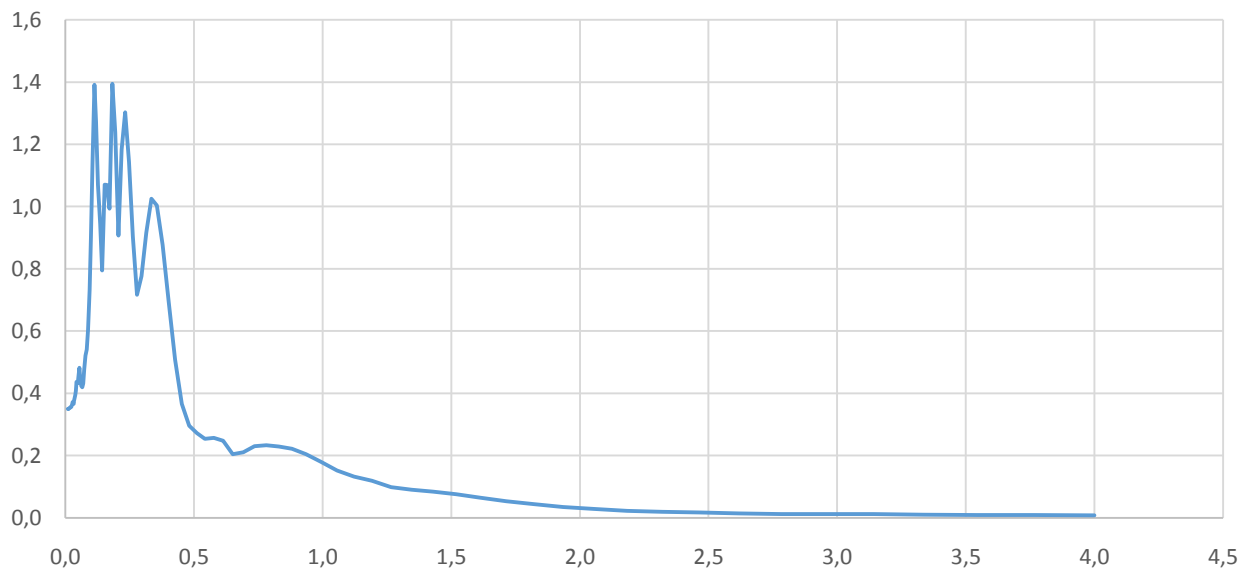
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 171



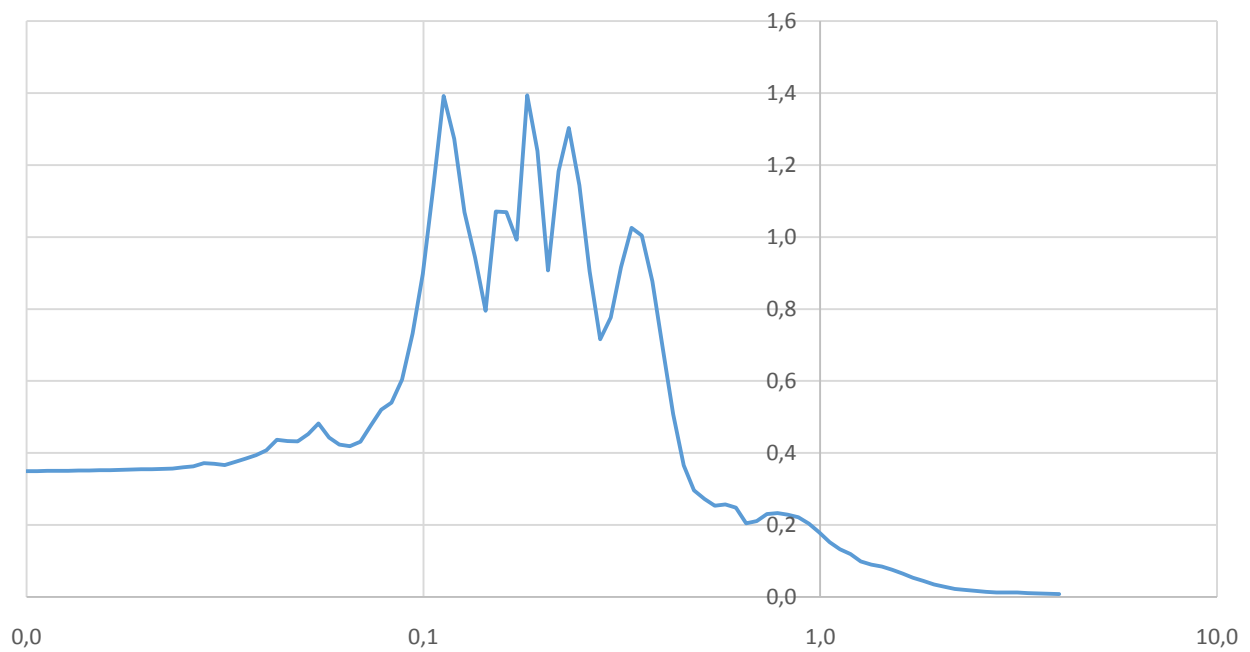
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 171



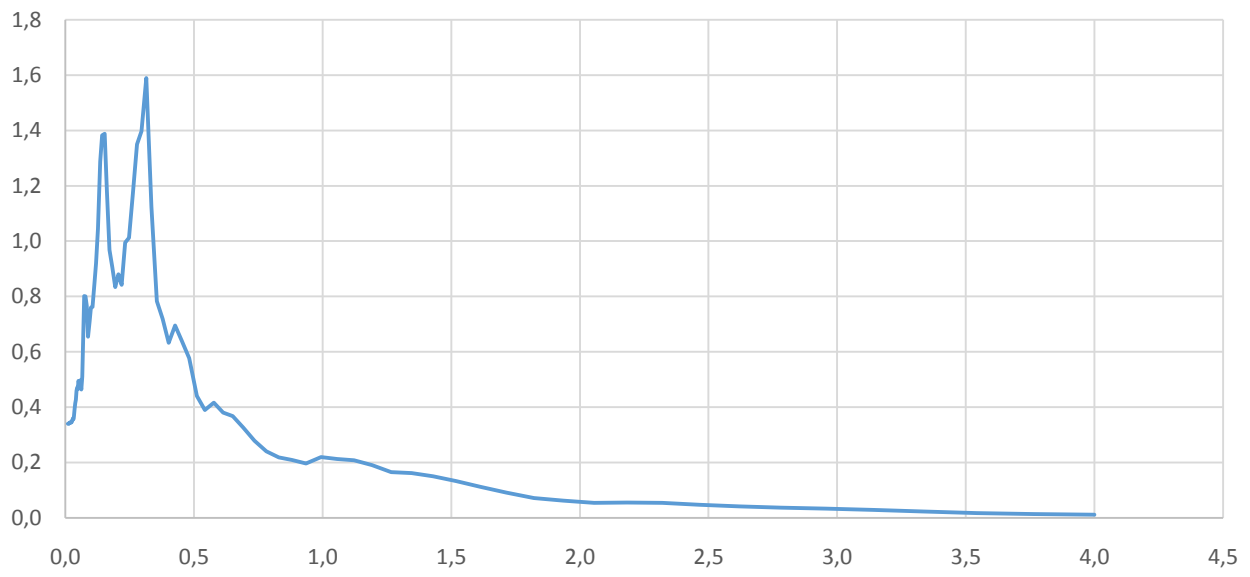
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 95



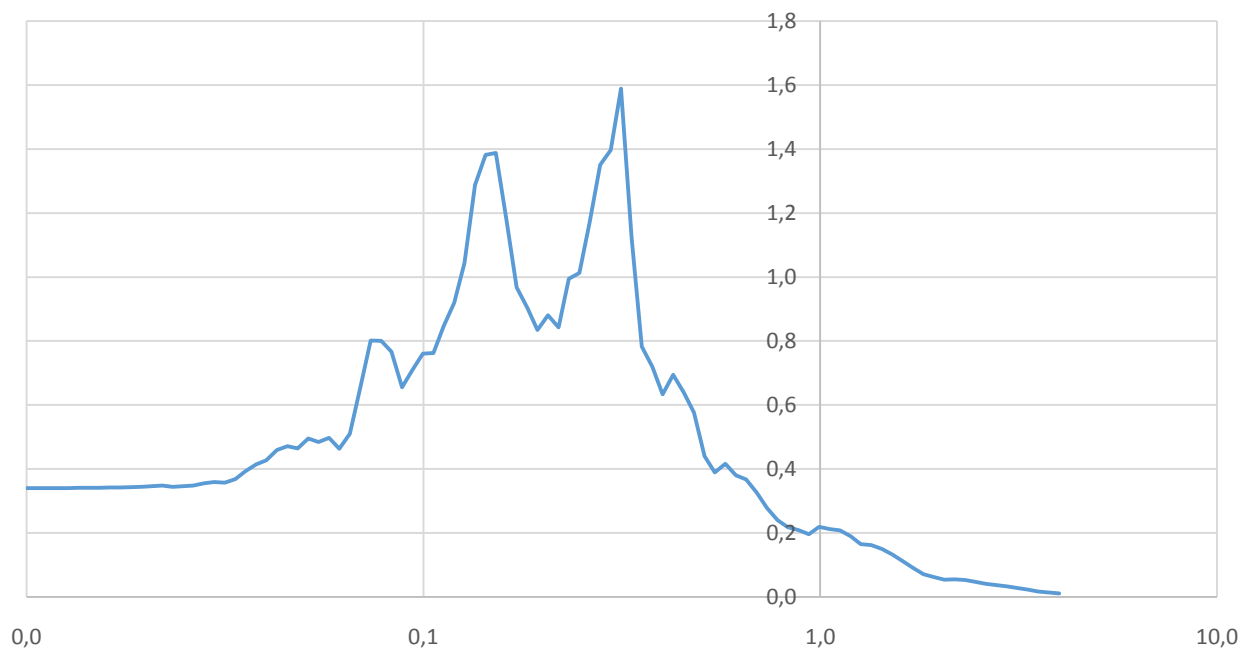
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 95



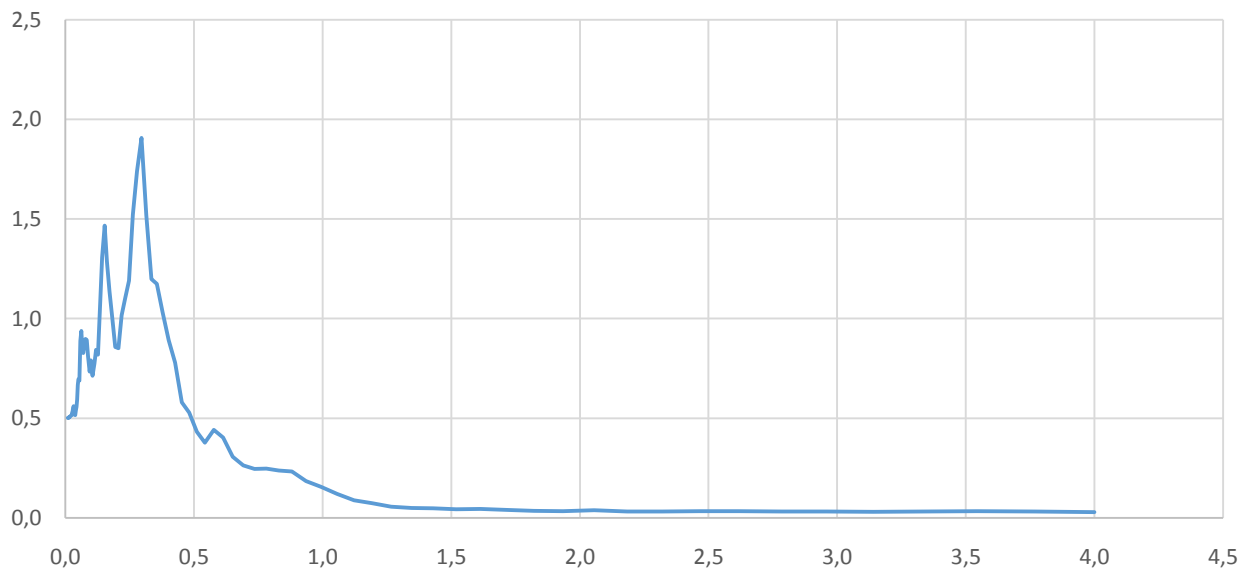
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 173



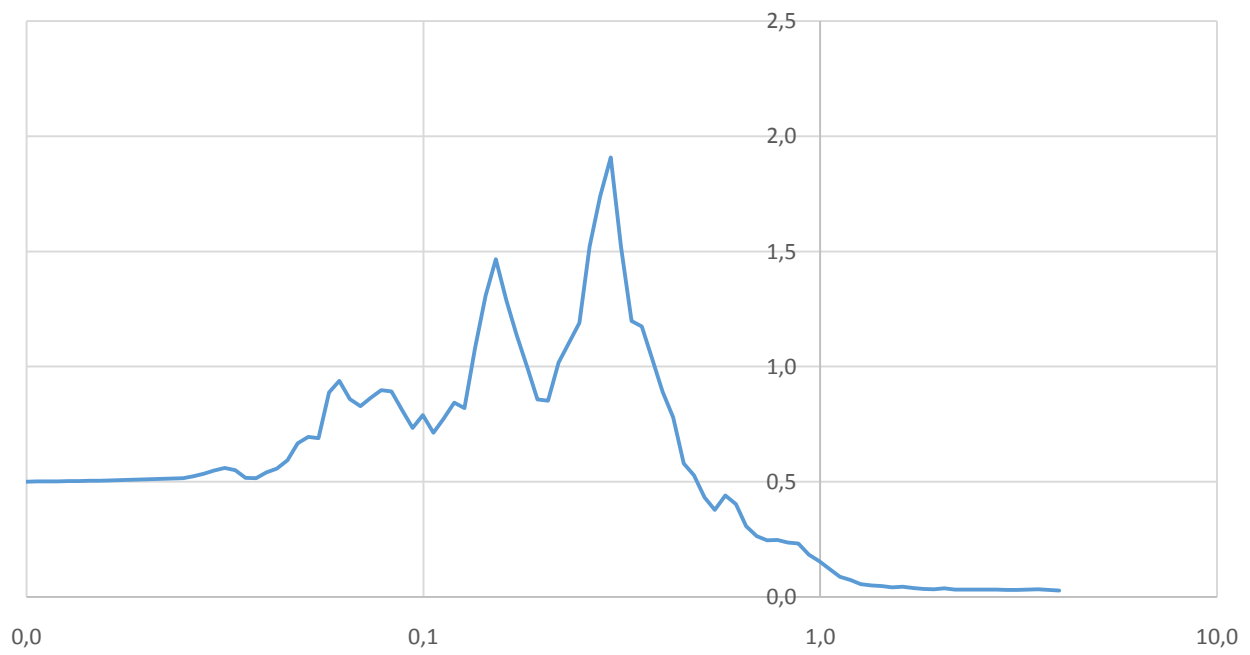
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 173



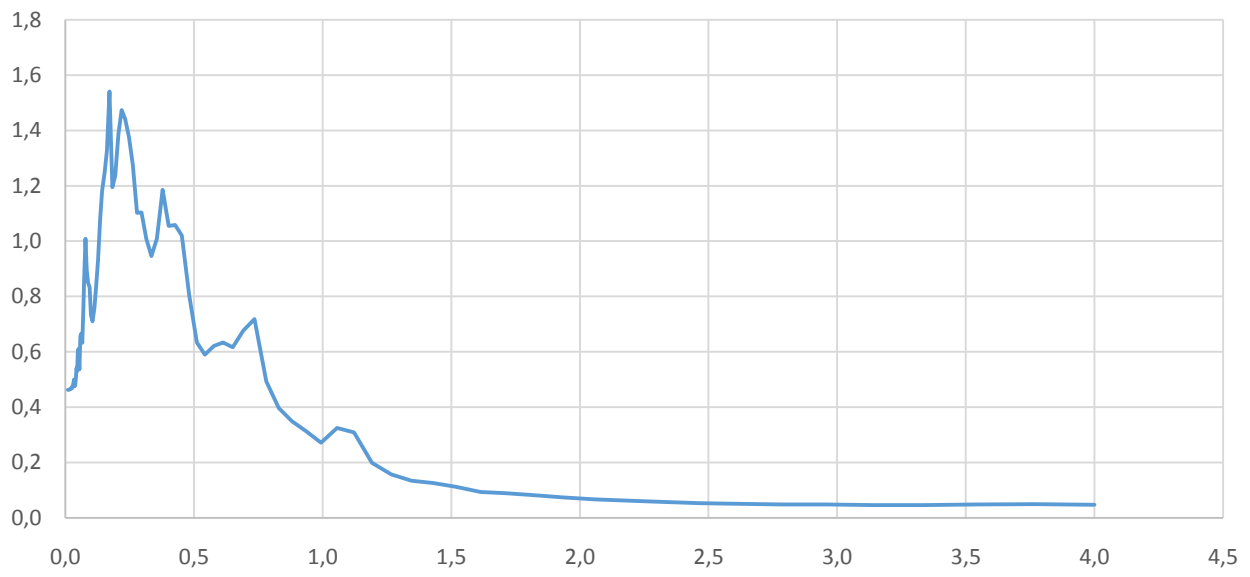
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 174



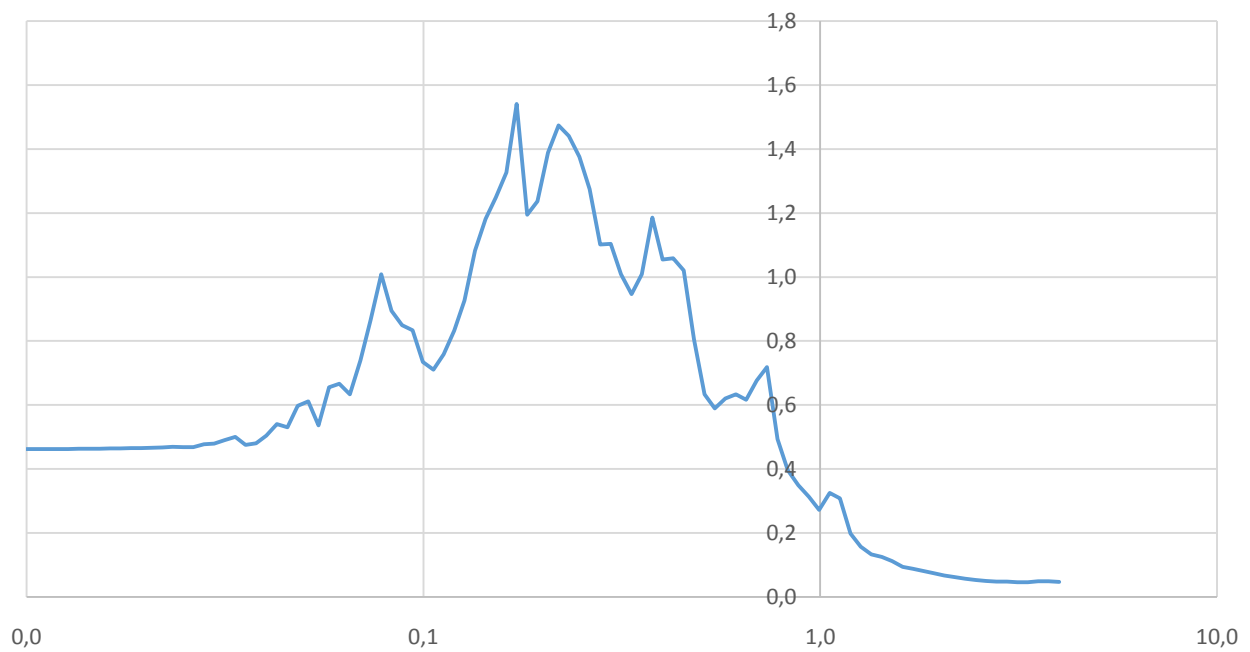
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 174



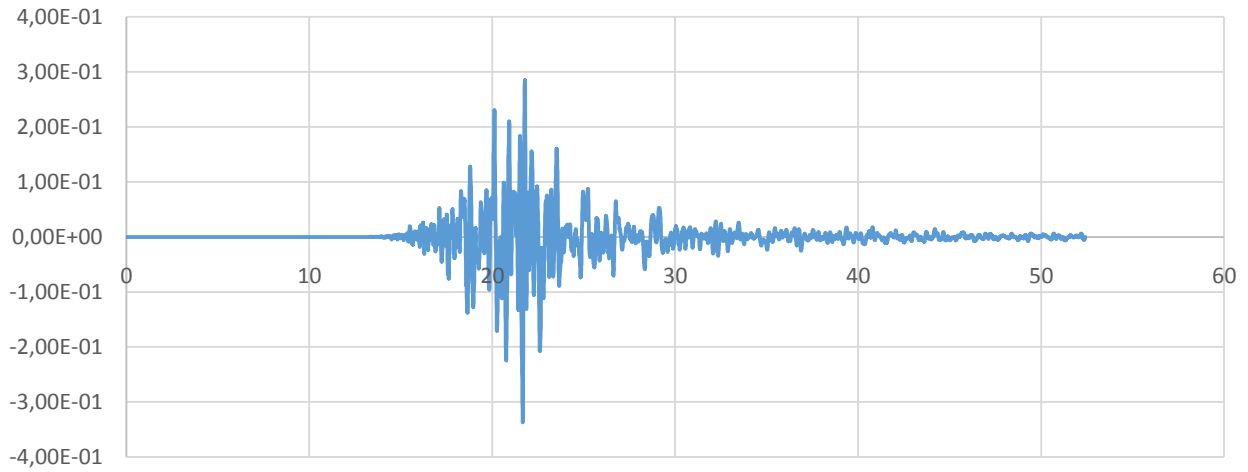
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 175



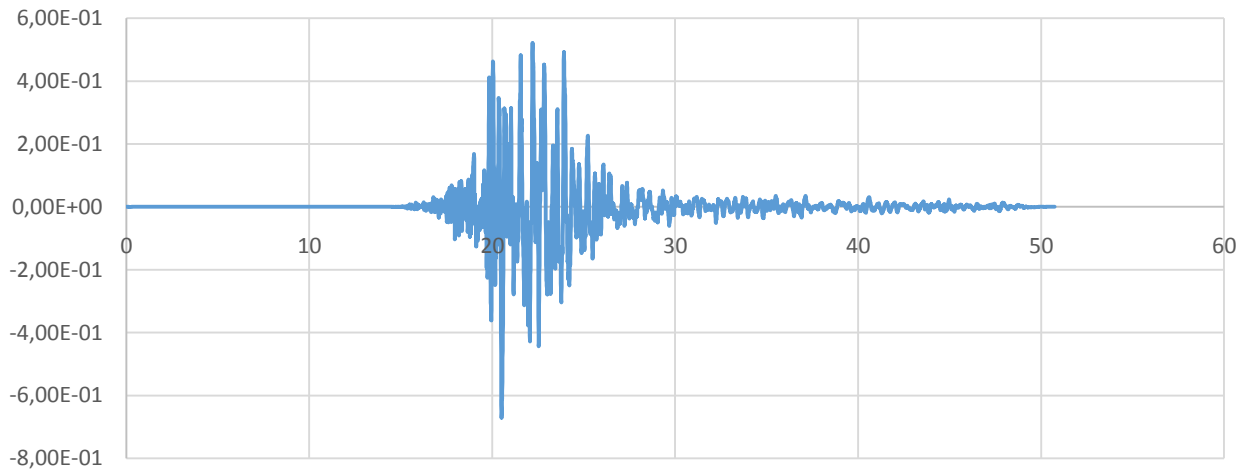
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 175



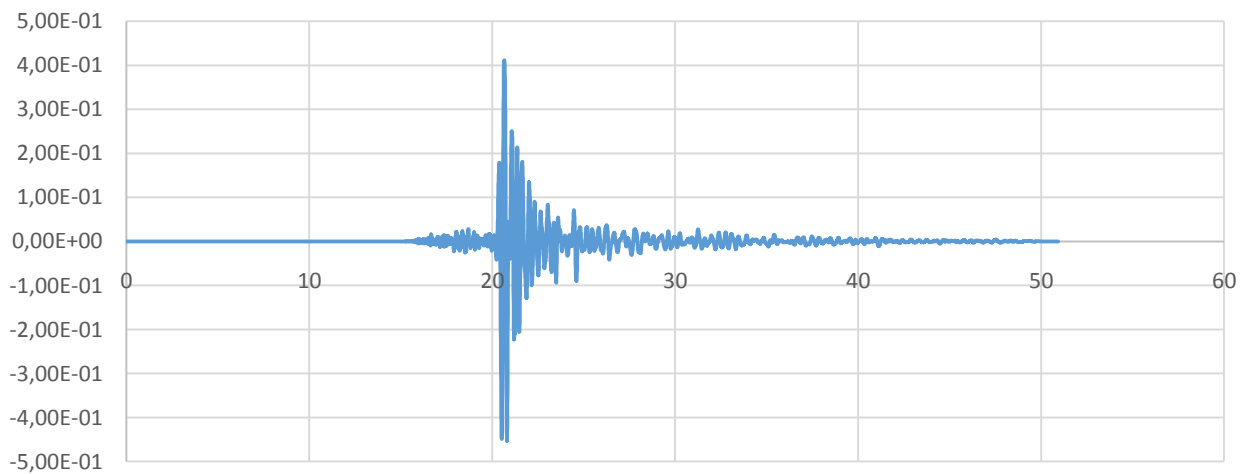
ACCELEROGRAMMA 1 / SCENARIO 169



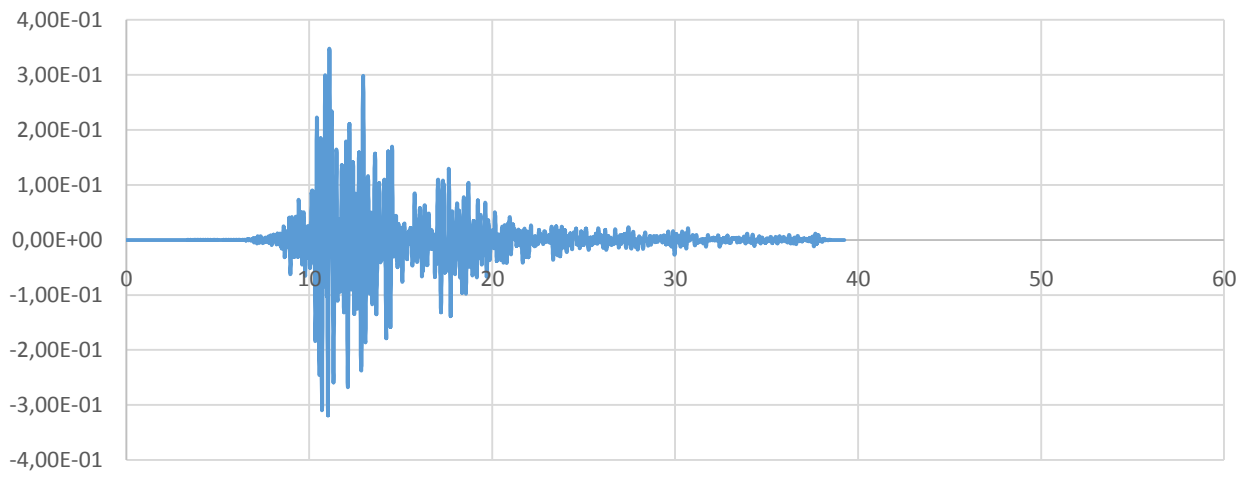
ACCELEROGRAMMA 2 / SCENARIO 625



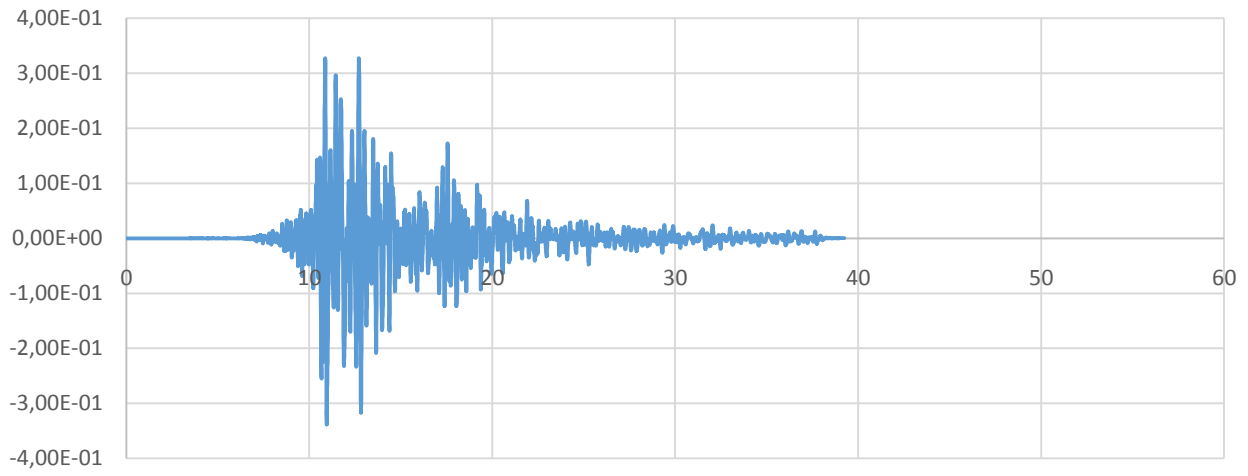
ACCELEROGRAMMA 3 / SCENARIO 171



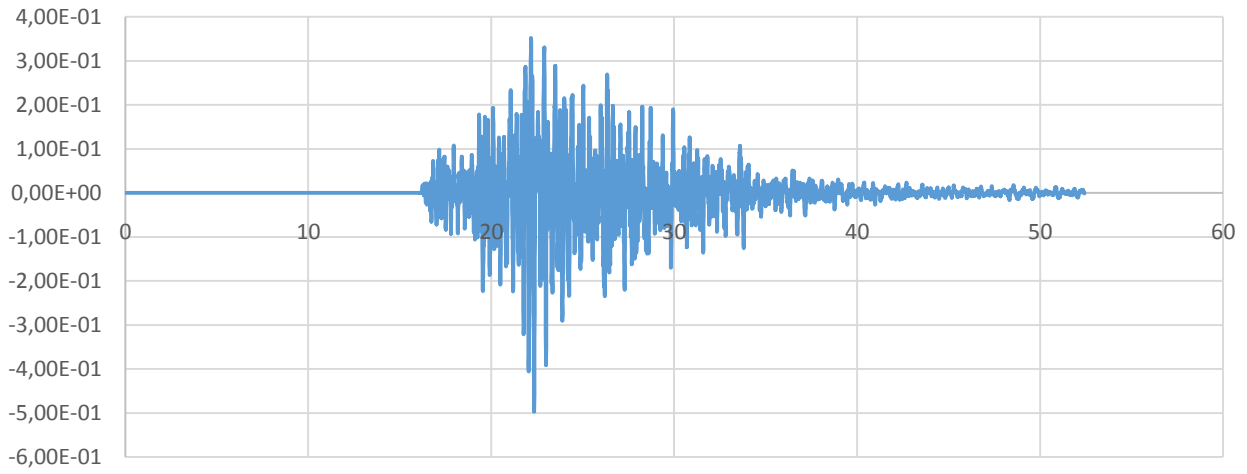
ACCELEROGRAMMA 4 / SCENARIO 95



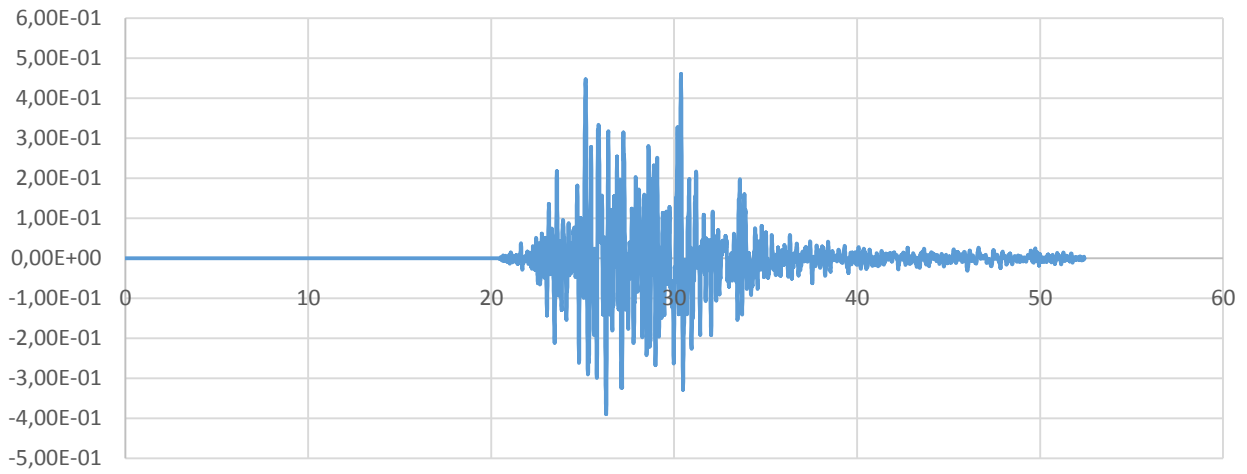
ACCELEROGRAMMA 5 / SCENARIO 173



ACCELEROGRAMMA 6 / SCENARIO 174



ACCELEROGRAMMA 7 / SCENARIO 175



7. MOPS 2009

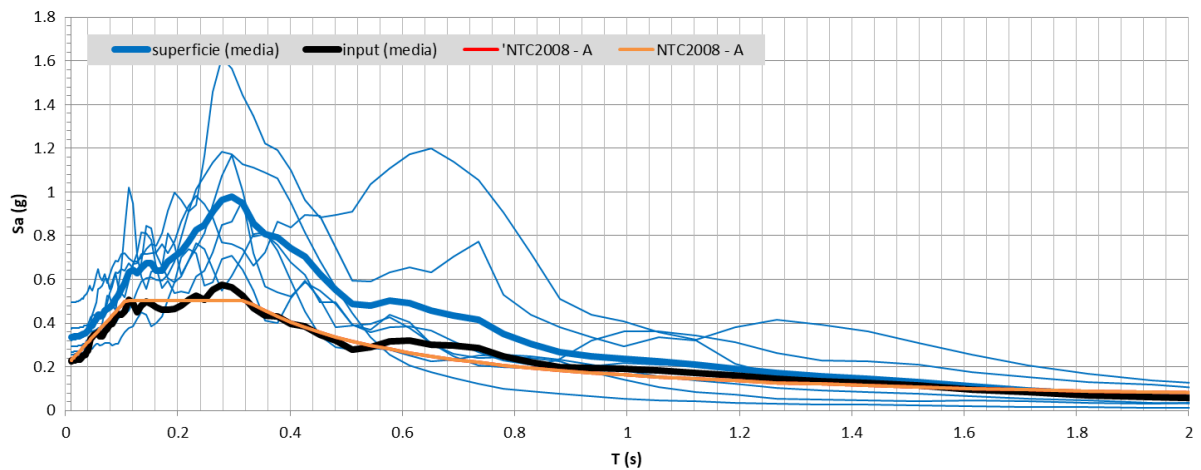
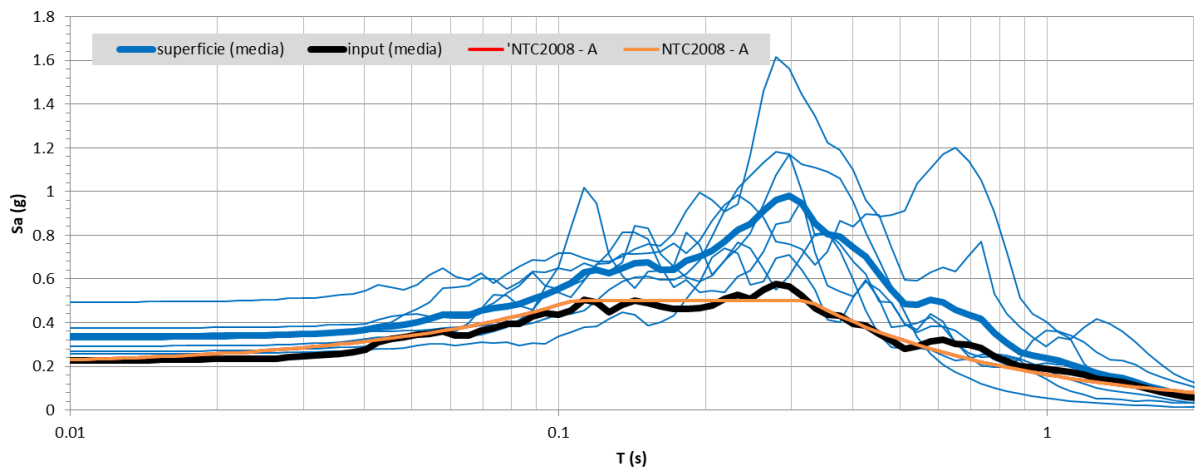
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.67	1.60	1.36
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.53	1.67	1.82
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.47	1.60	1.75
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.18	1.36	1.55

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

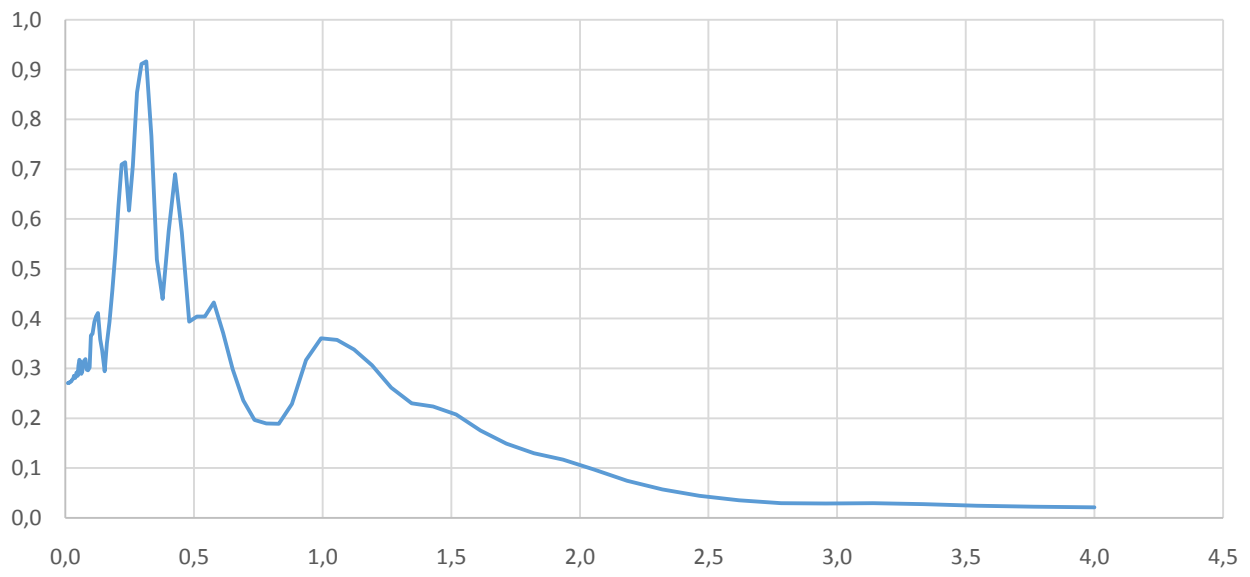
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

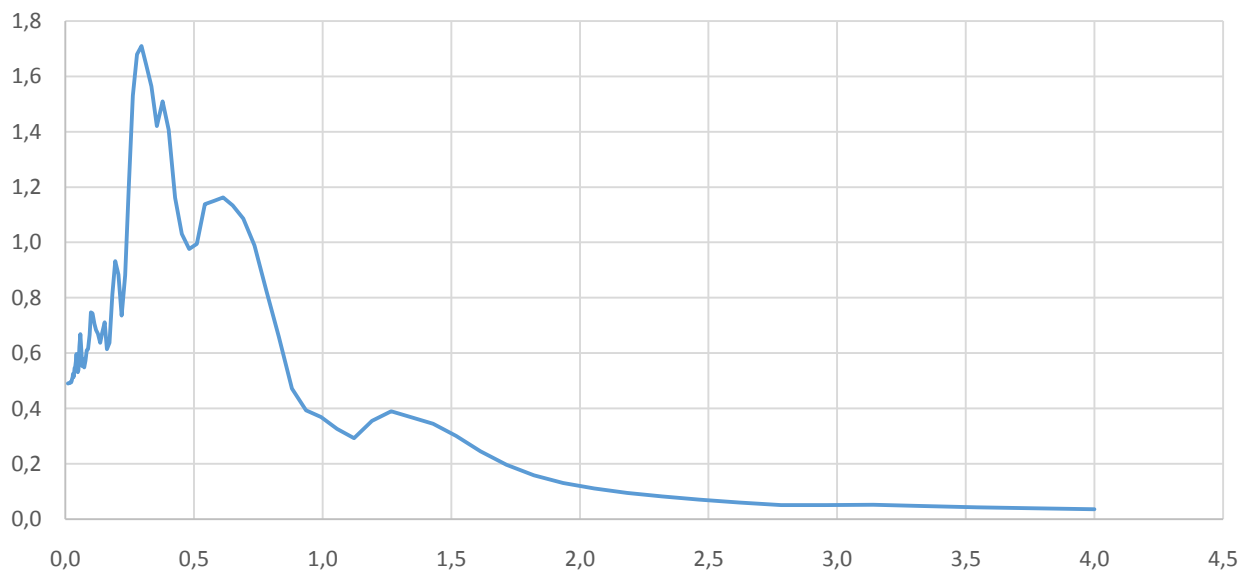
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



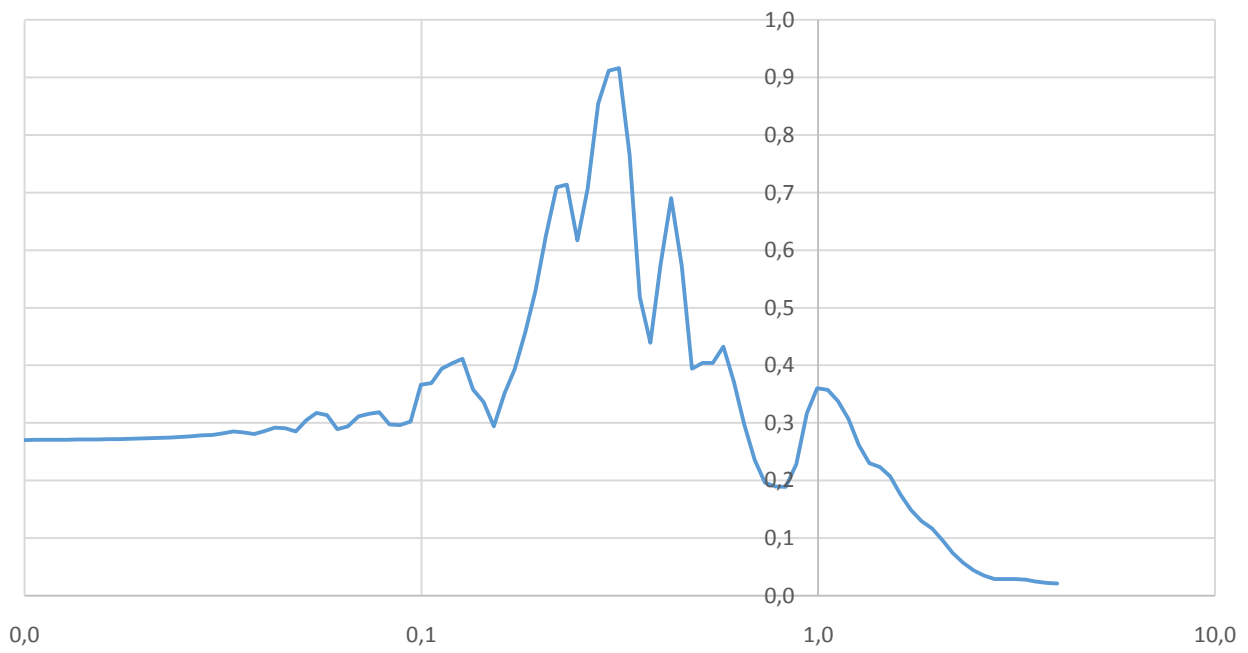
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 456



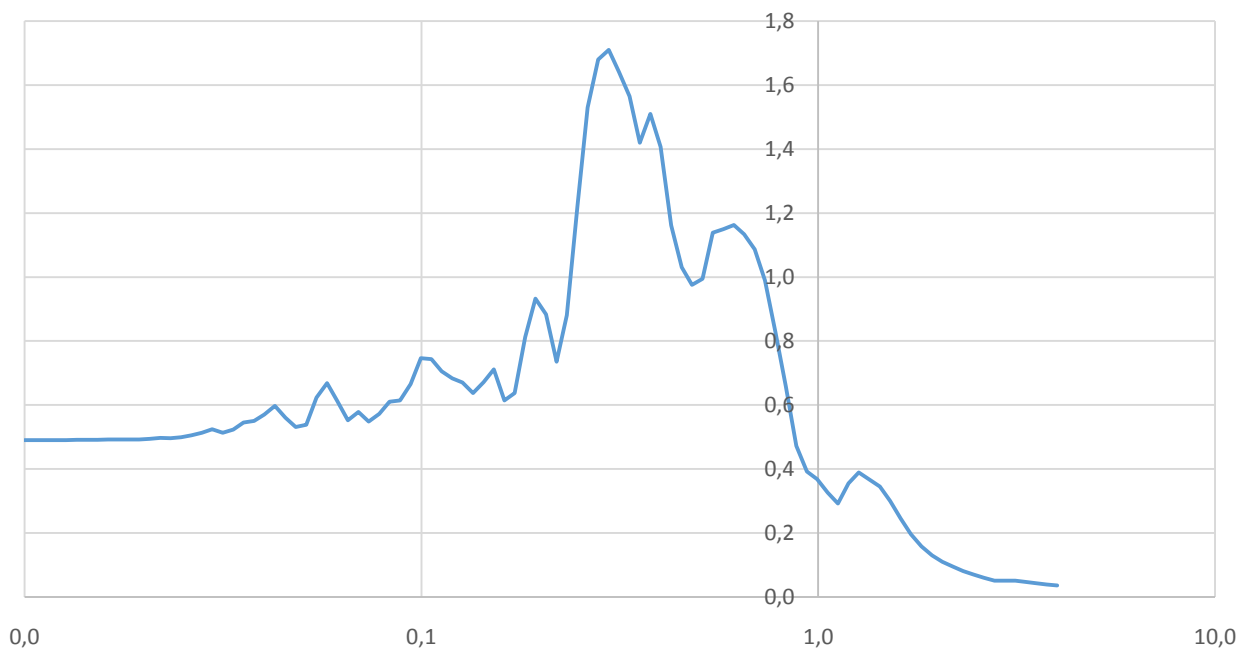
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 72



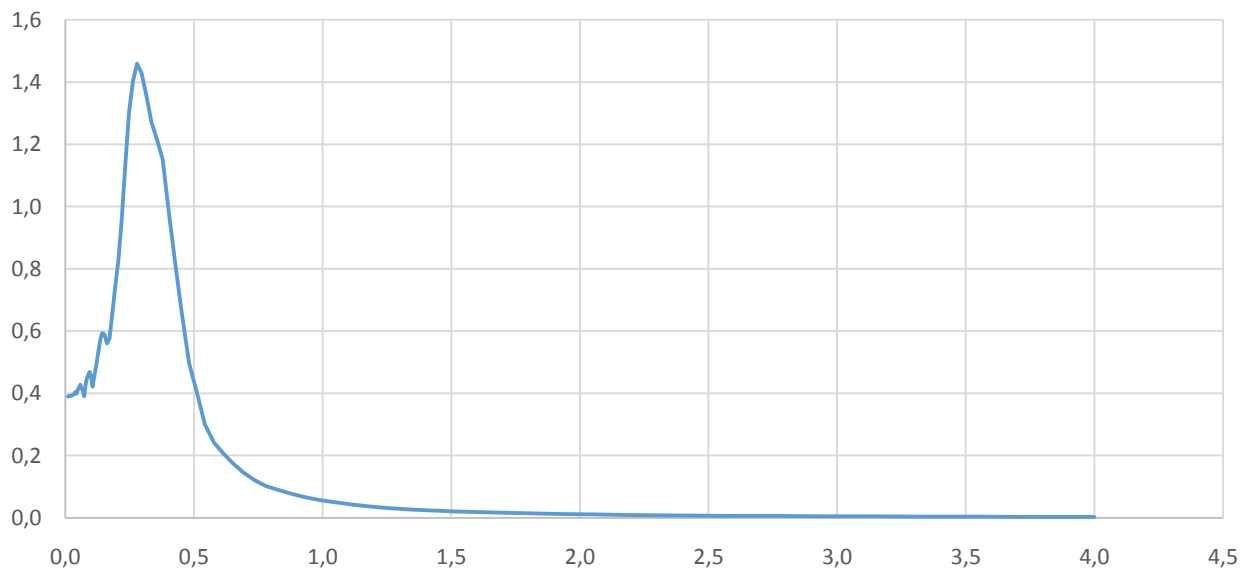
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 456



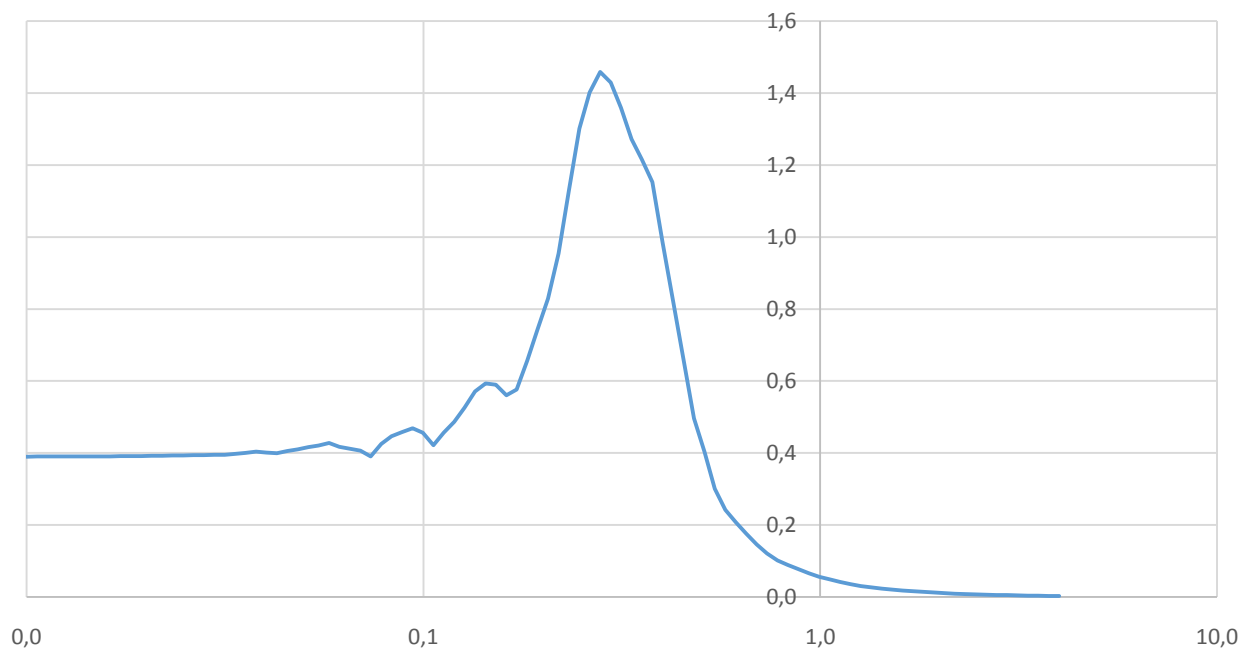
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 72



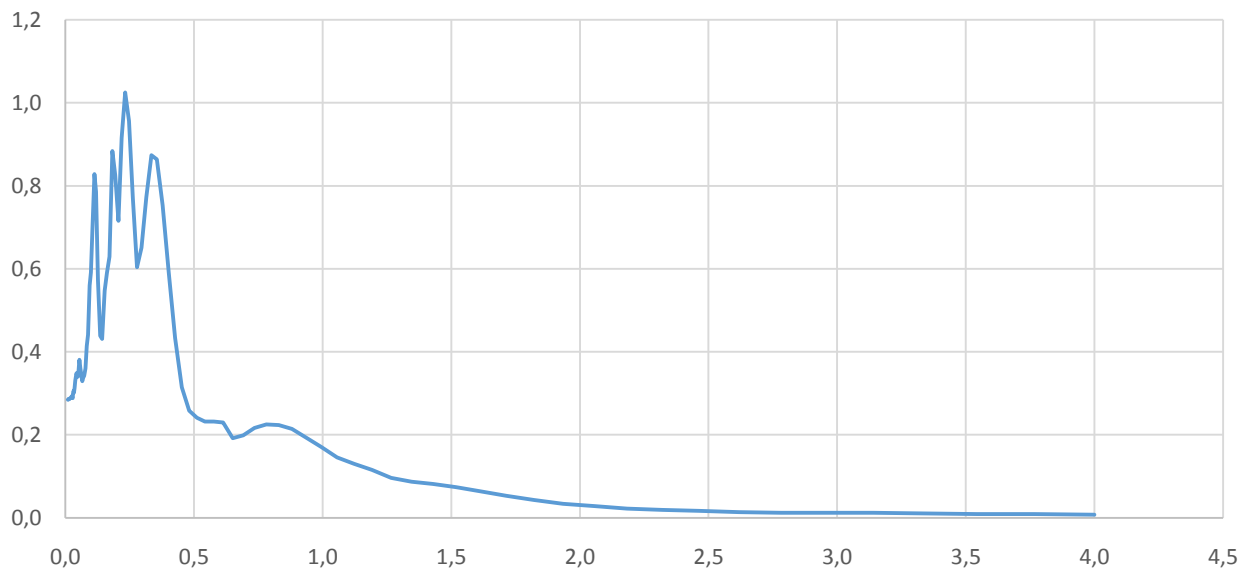
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 73



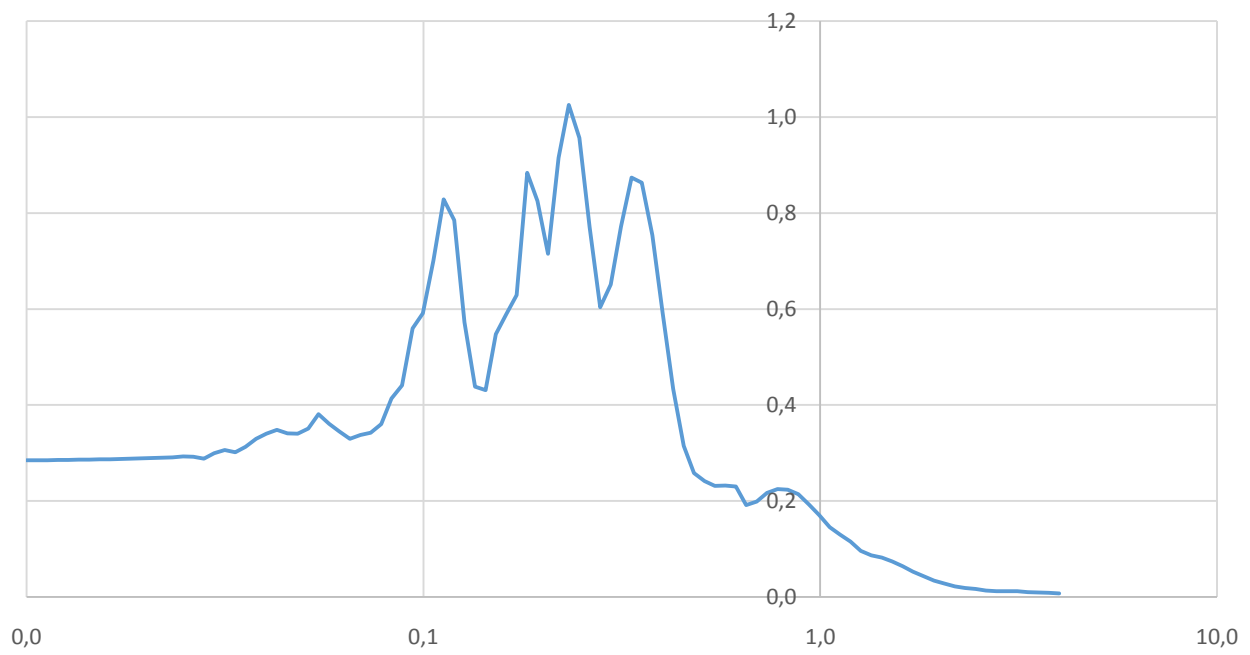
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 73



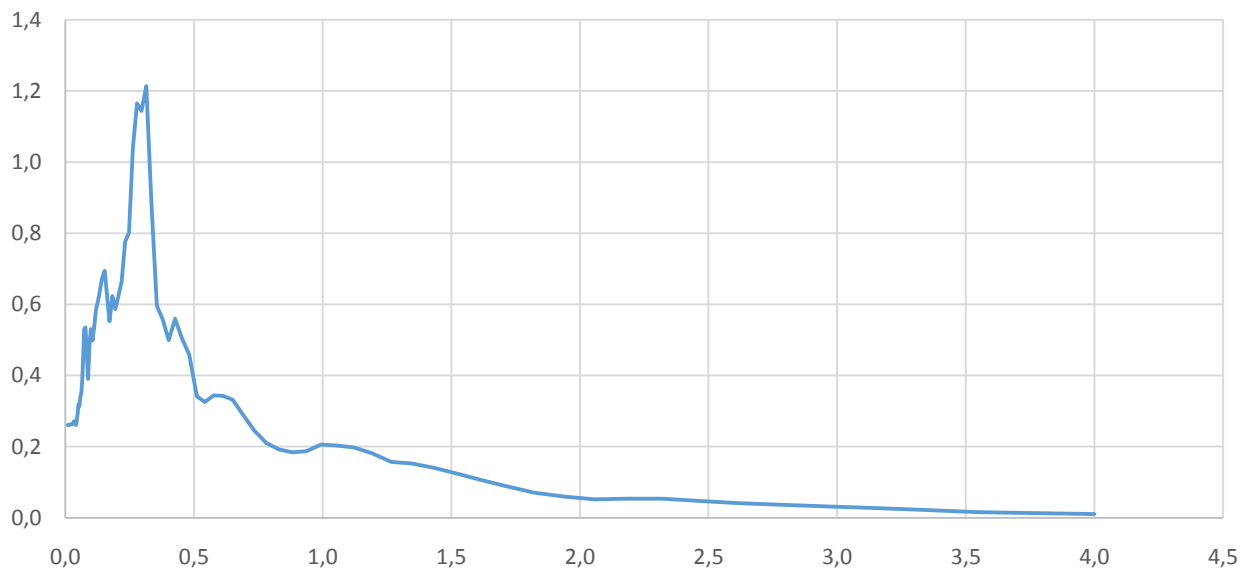
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 74



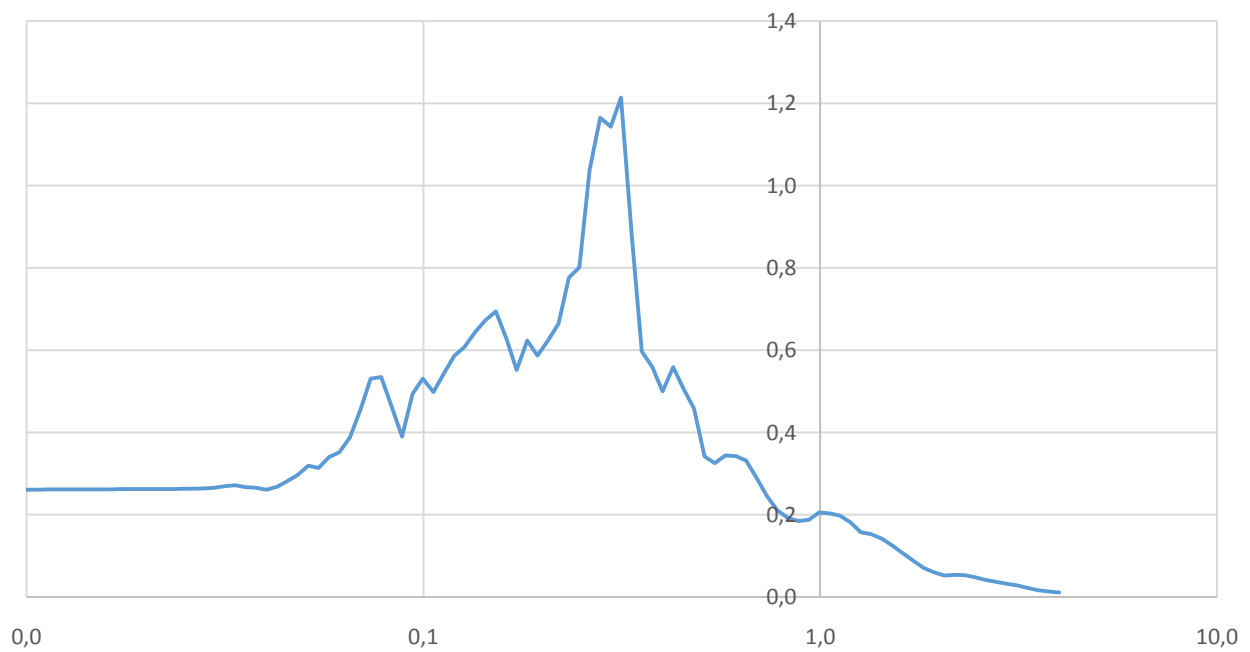
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 74



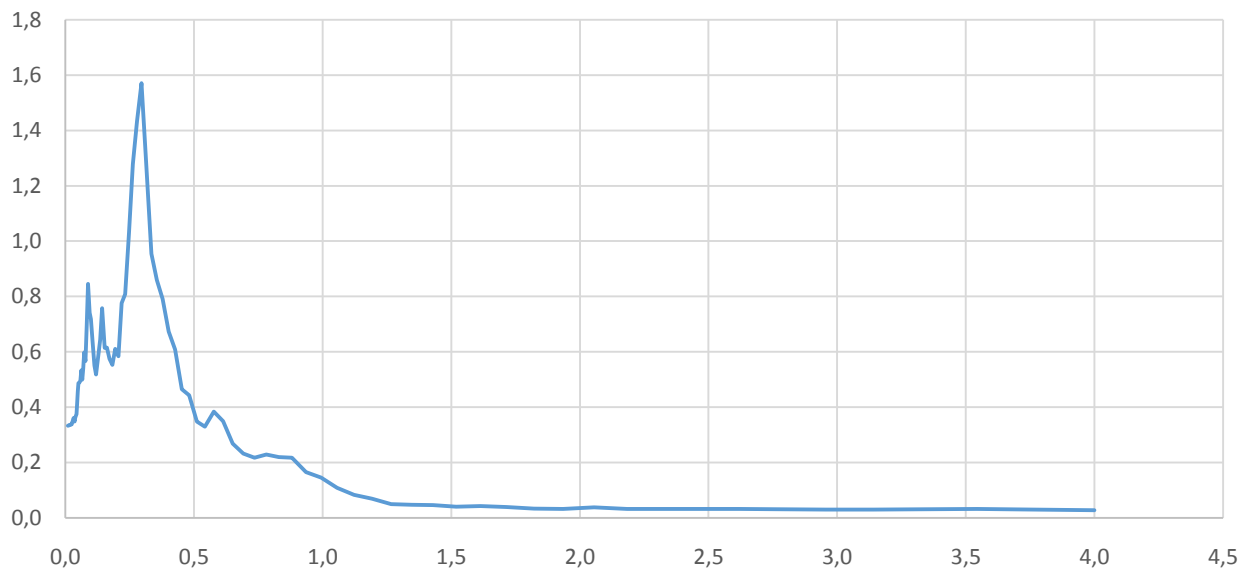
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 75



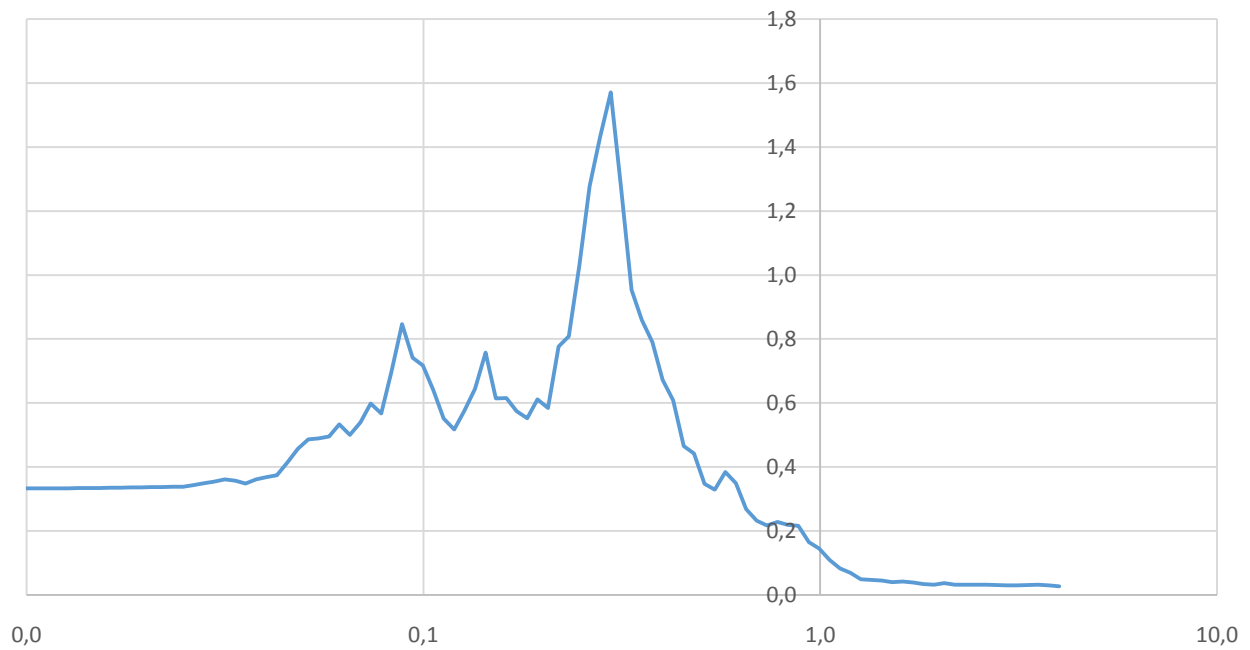
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 75



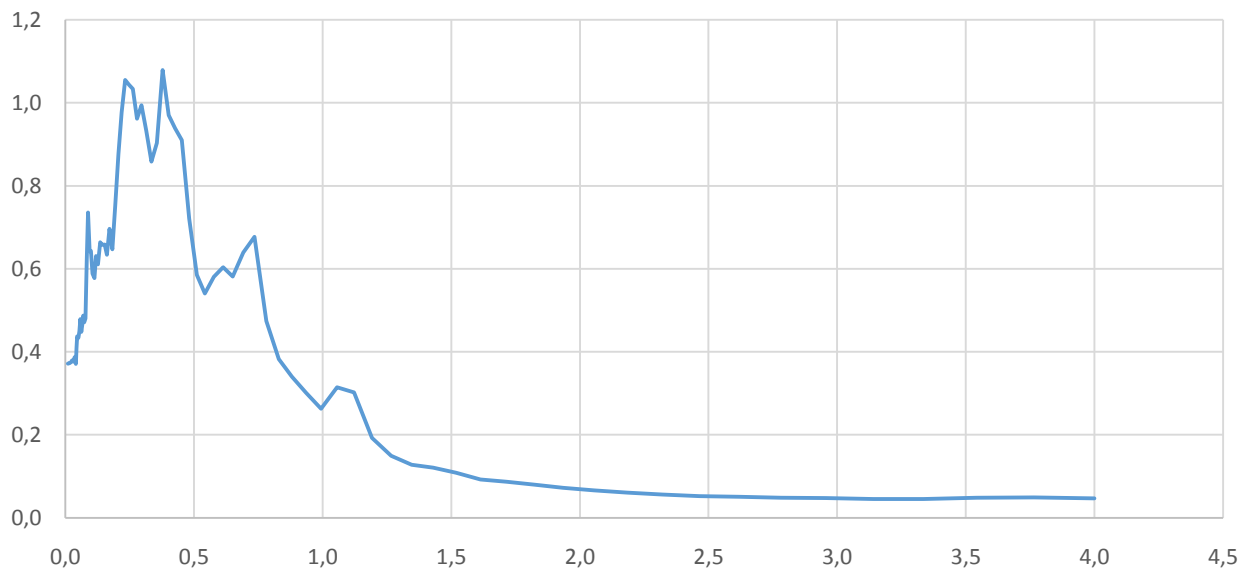
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 76



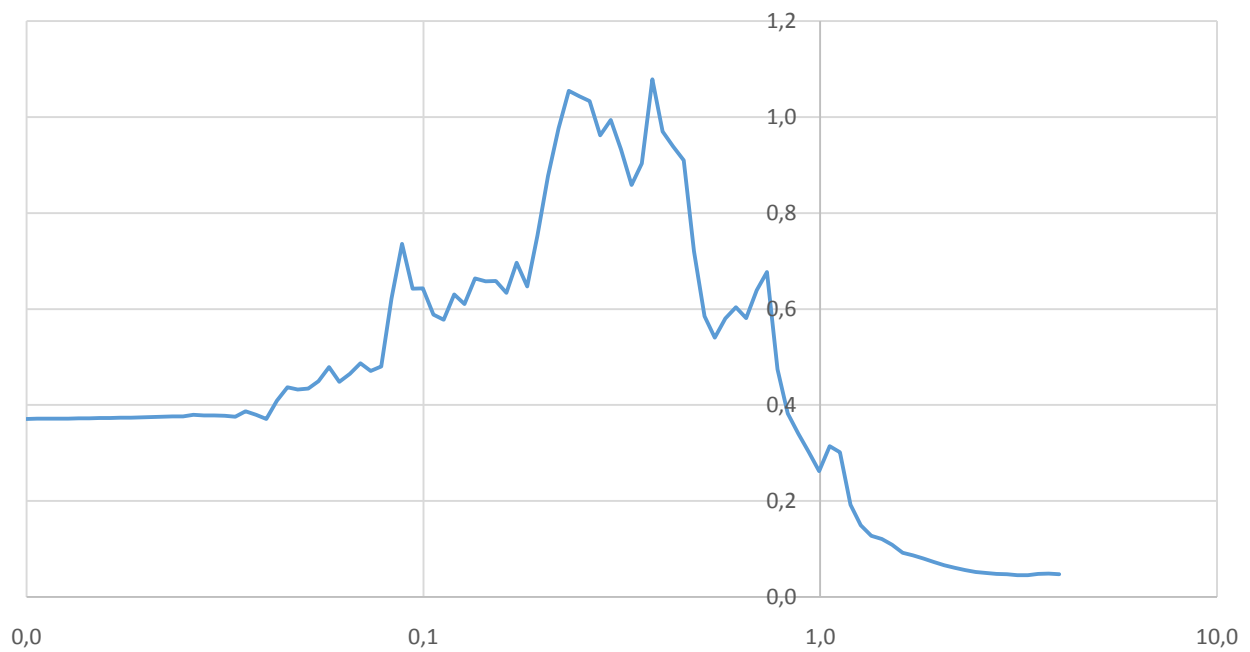
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 76



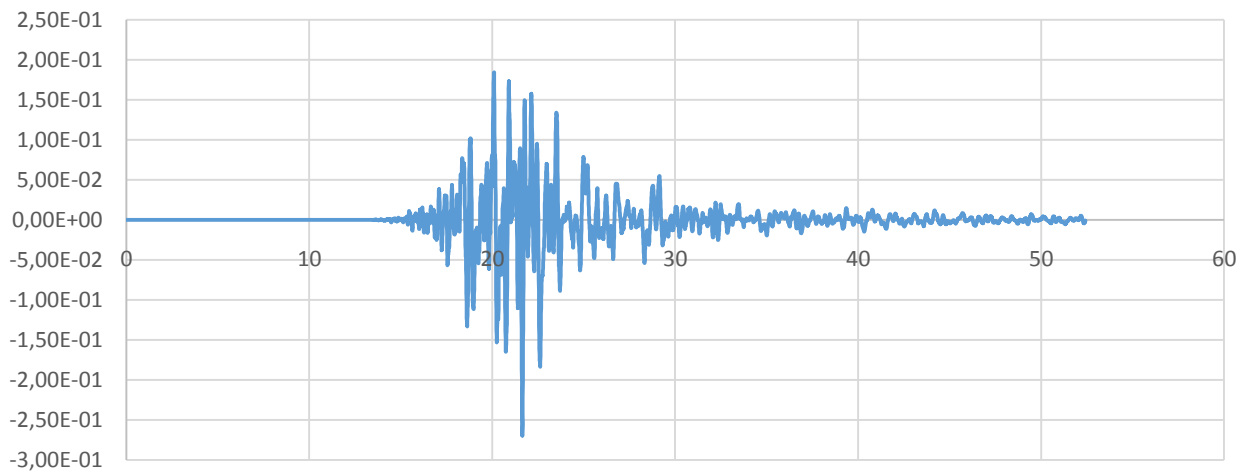
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 693



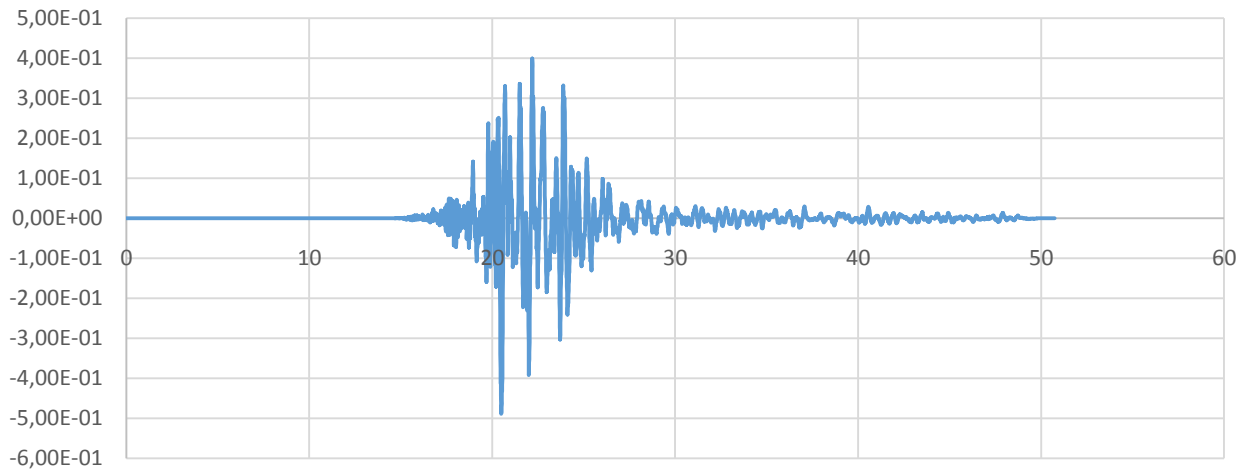
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 693



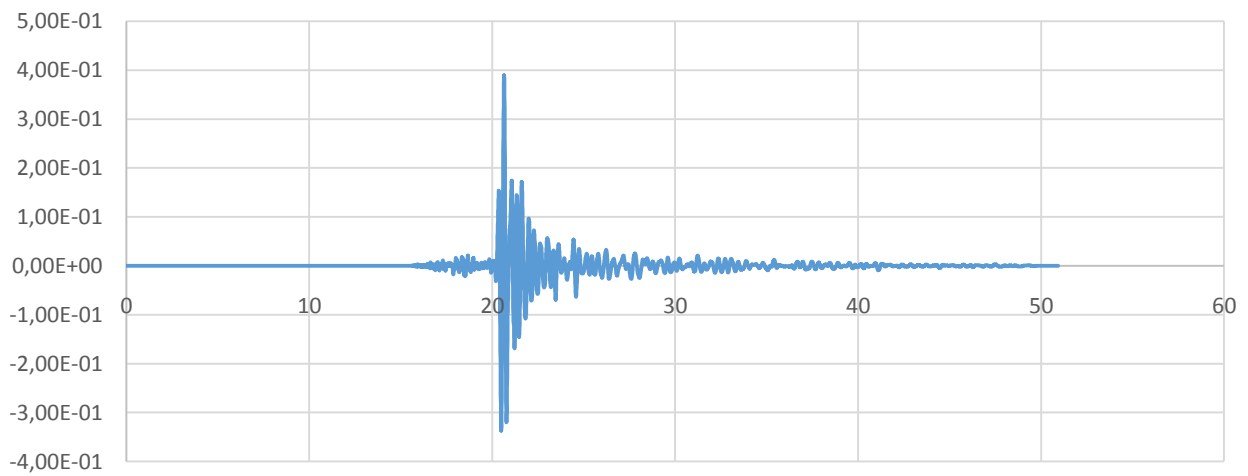
ACCELEROGRAMMA 1 / SCENARIO 456



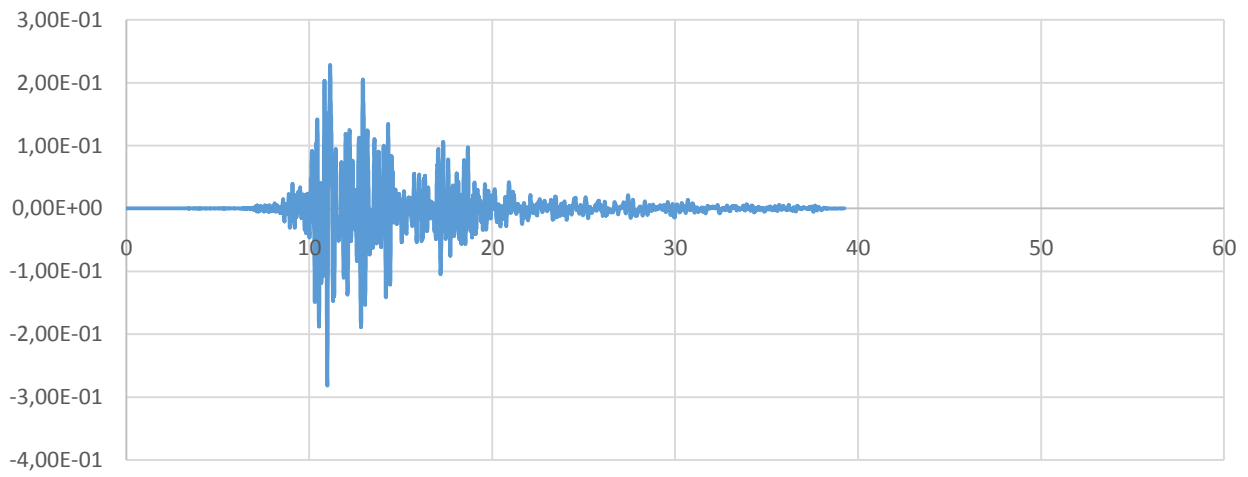
ACCELEROGRAMMA 2 / SCENARIO 72



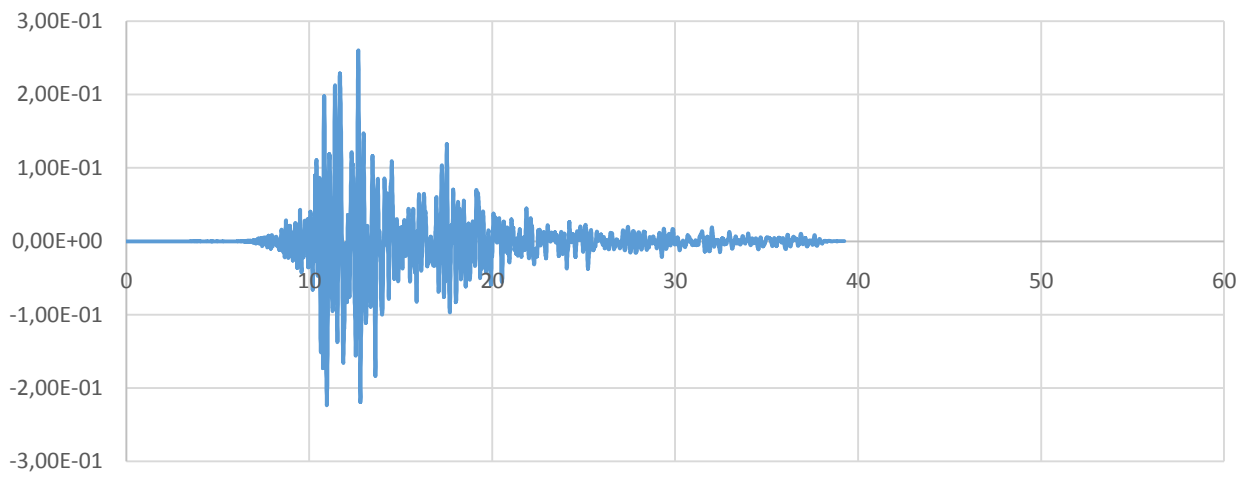
ACCELEROGRAMMA 3 / SCENARIO 73



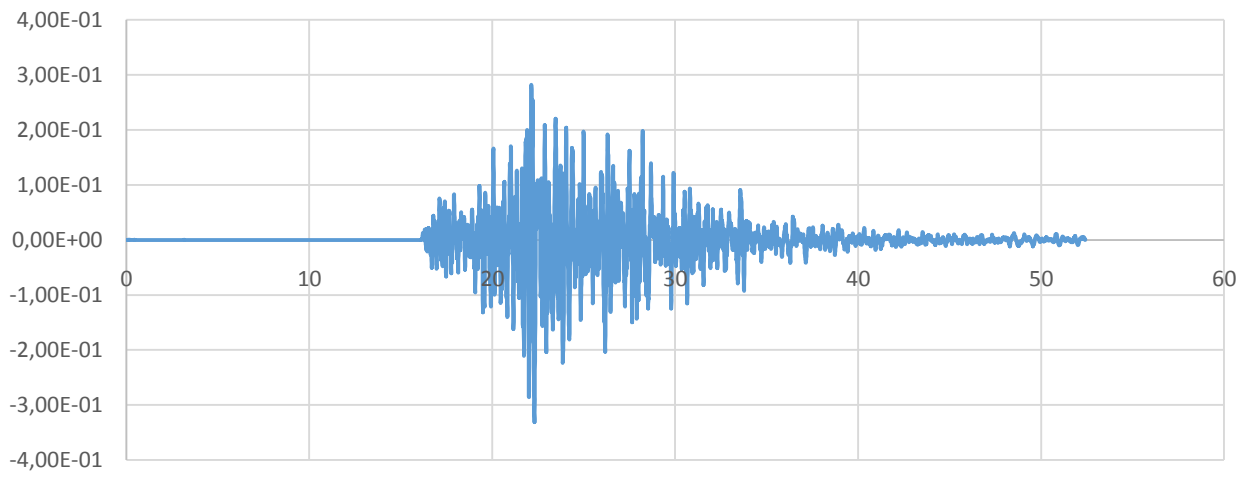
ACCELEROGRAMMA 4 / SCENARIO 74



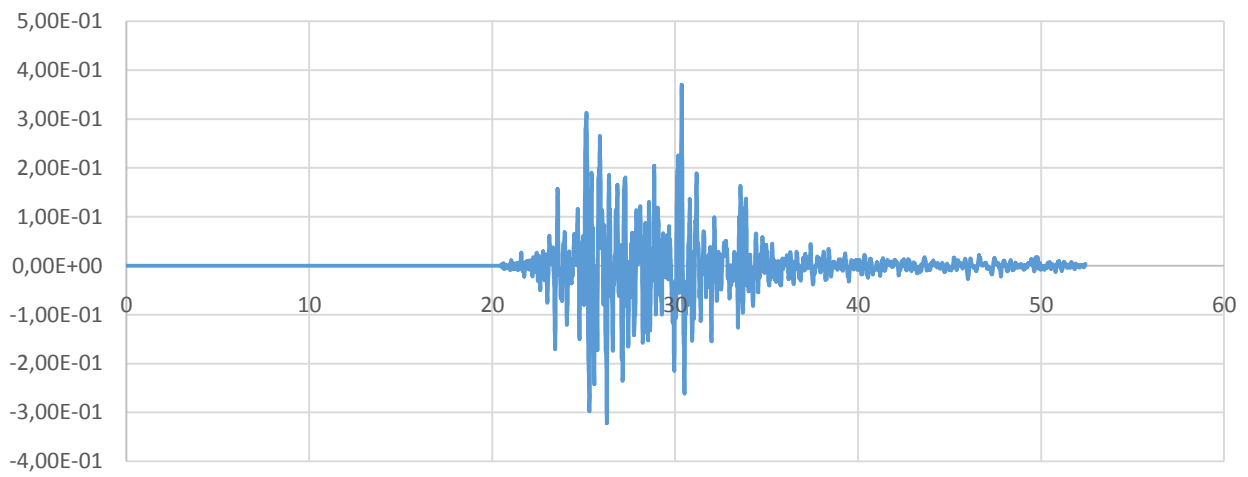
ACCELEROGRAMMA 5 / SCENARIO 75



ACCELEROGRAMMA 6 / SCENARIO 76



ACCELEROGRAMMA 7 / SCENARIO 693



8. MOPS 2010

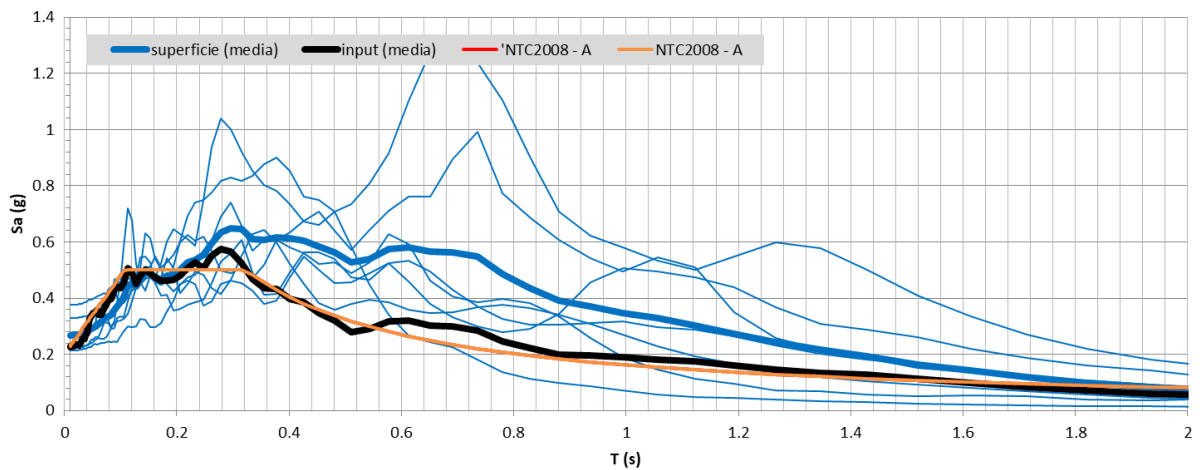
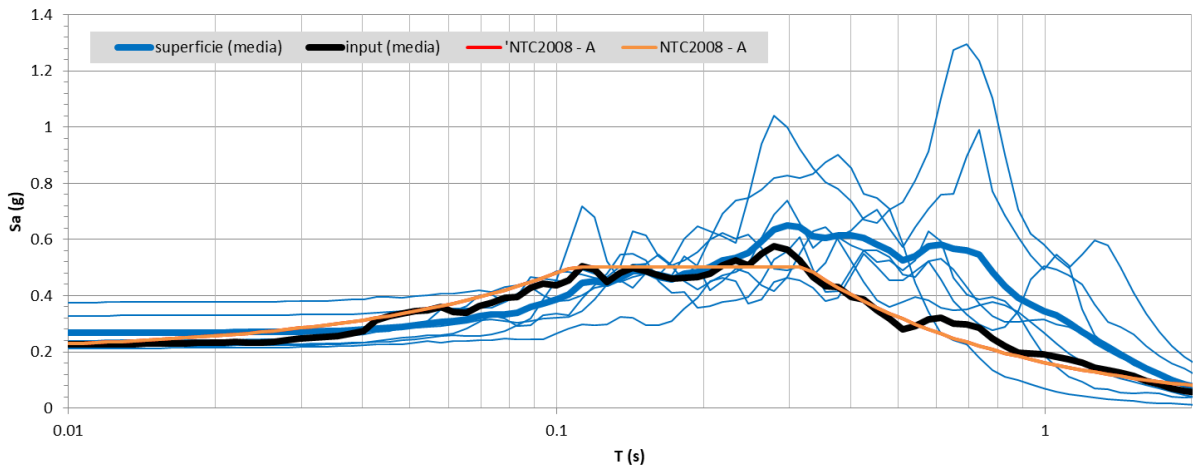
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.27	1.90	1.93
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.09	1.27	1.48
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.67	1.90	2.17
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.72	1.93	2.16

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

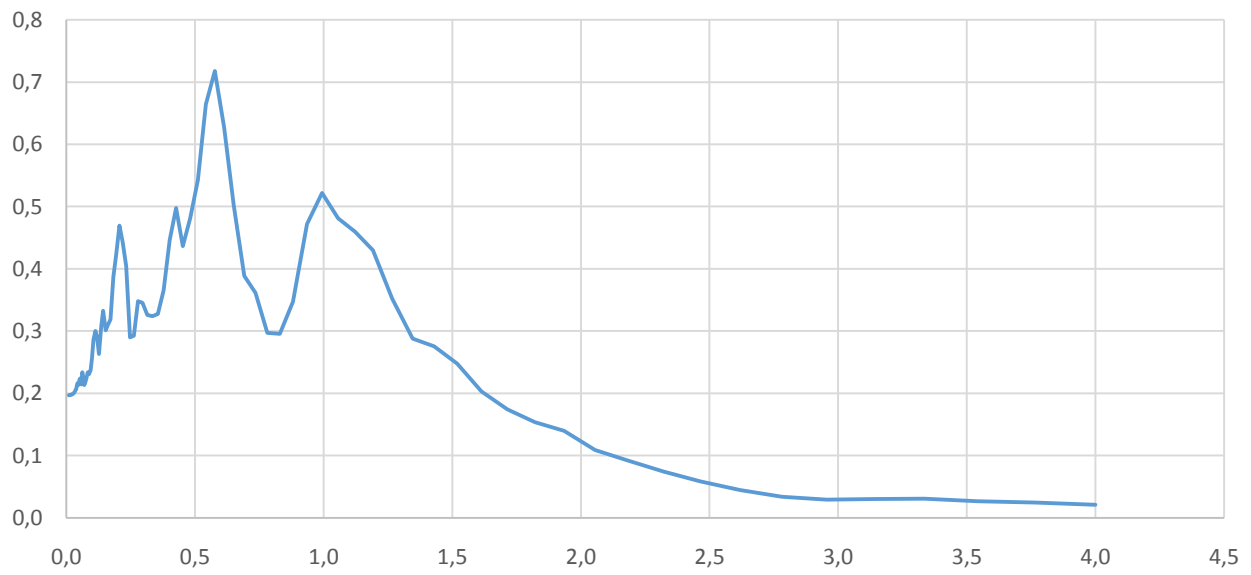
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

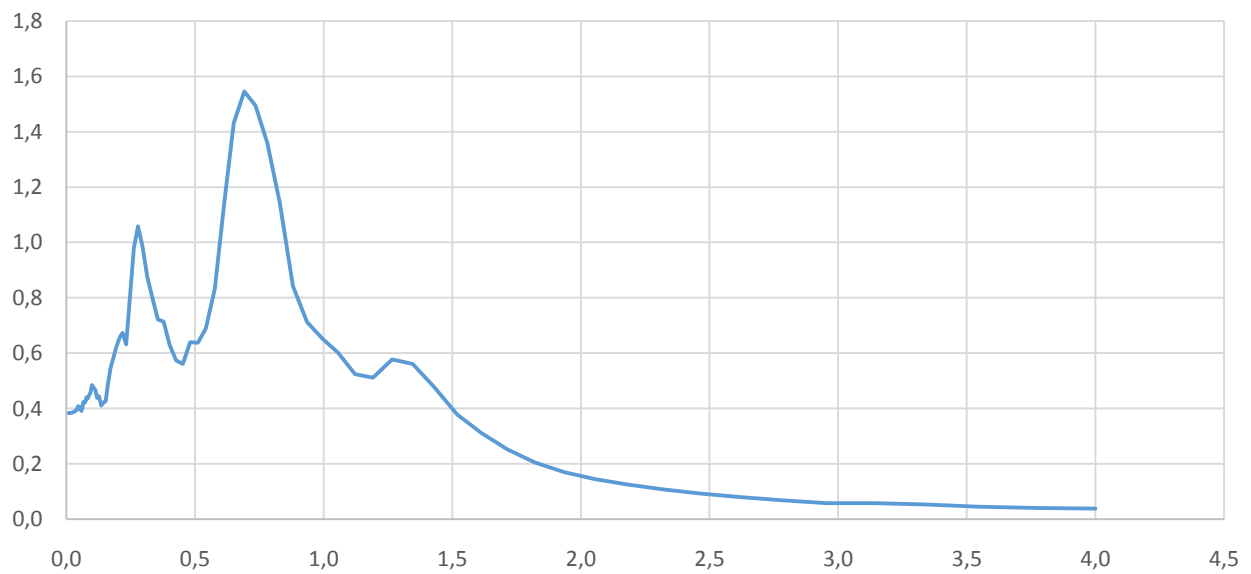
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



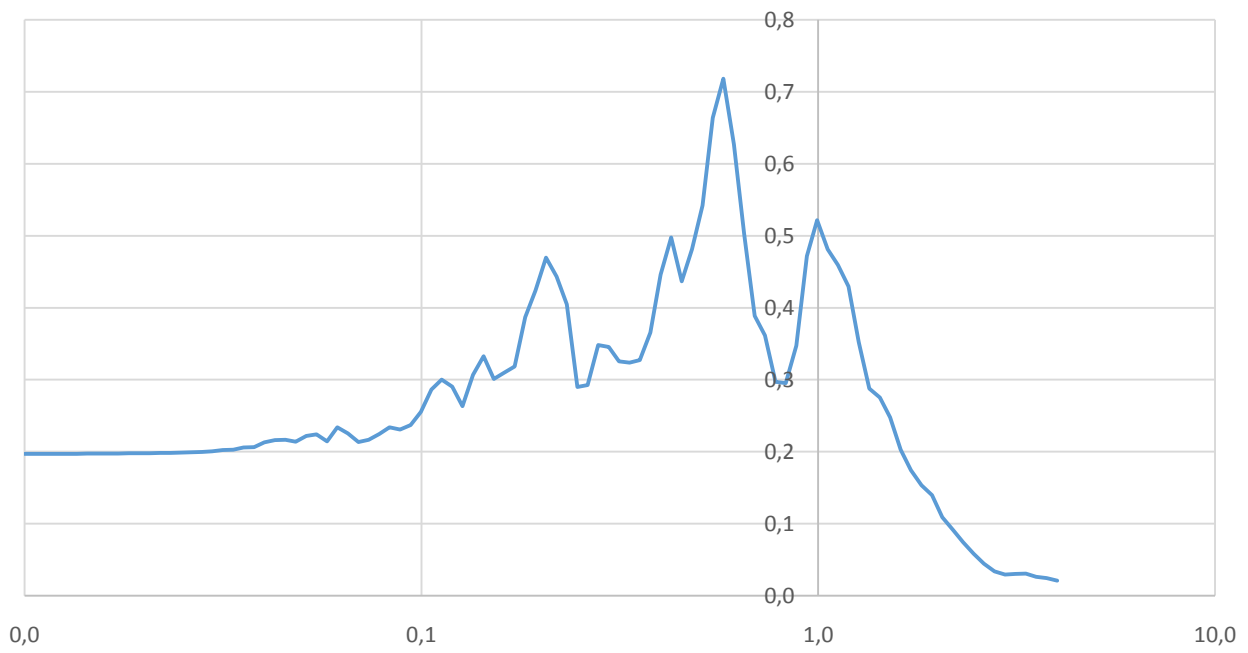
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 281



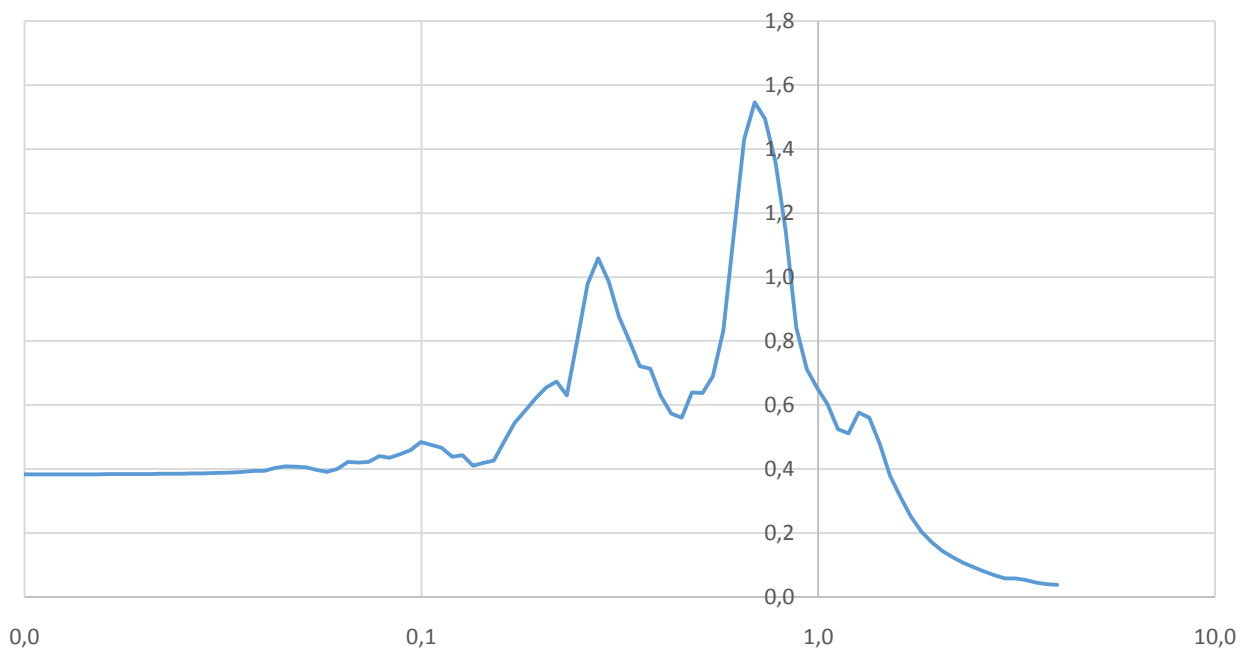
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 534



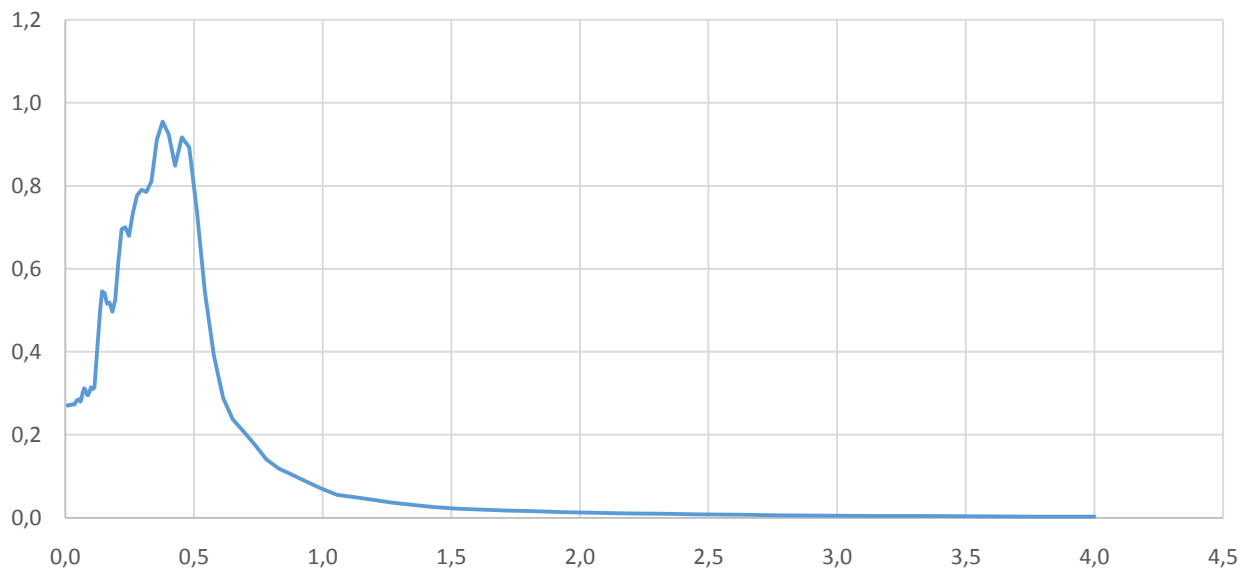
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 281



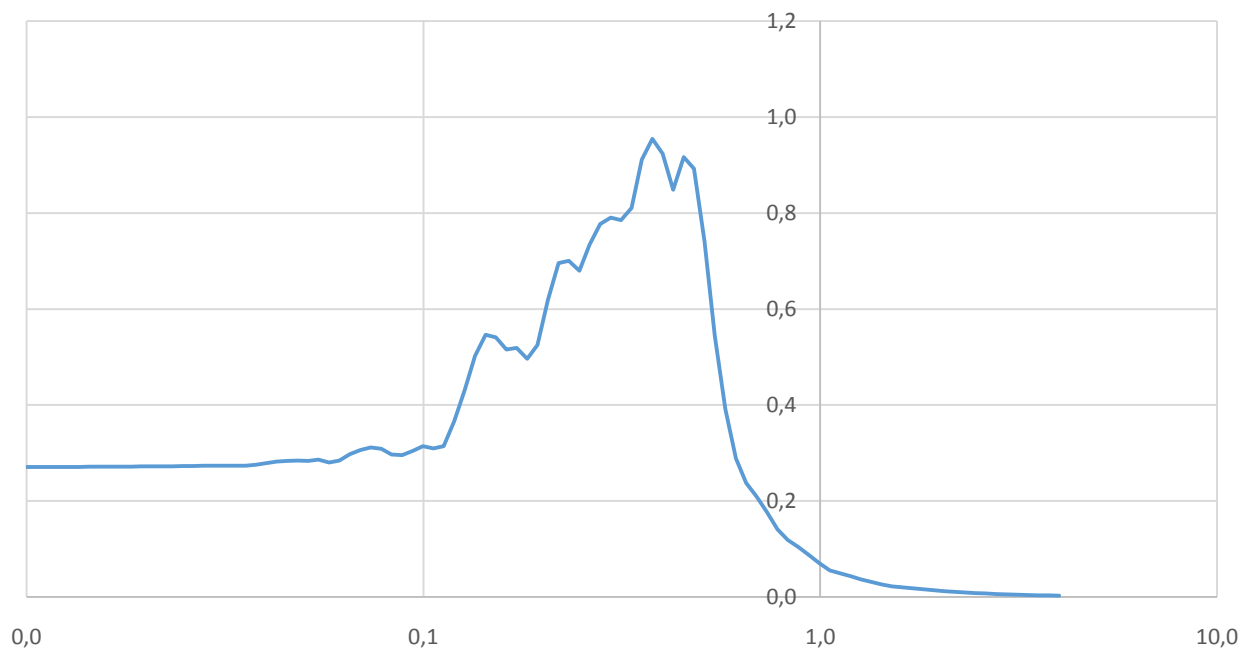
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 534



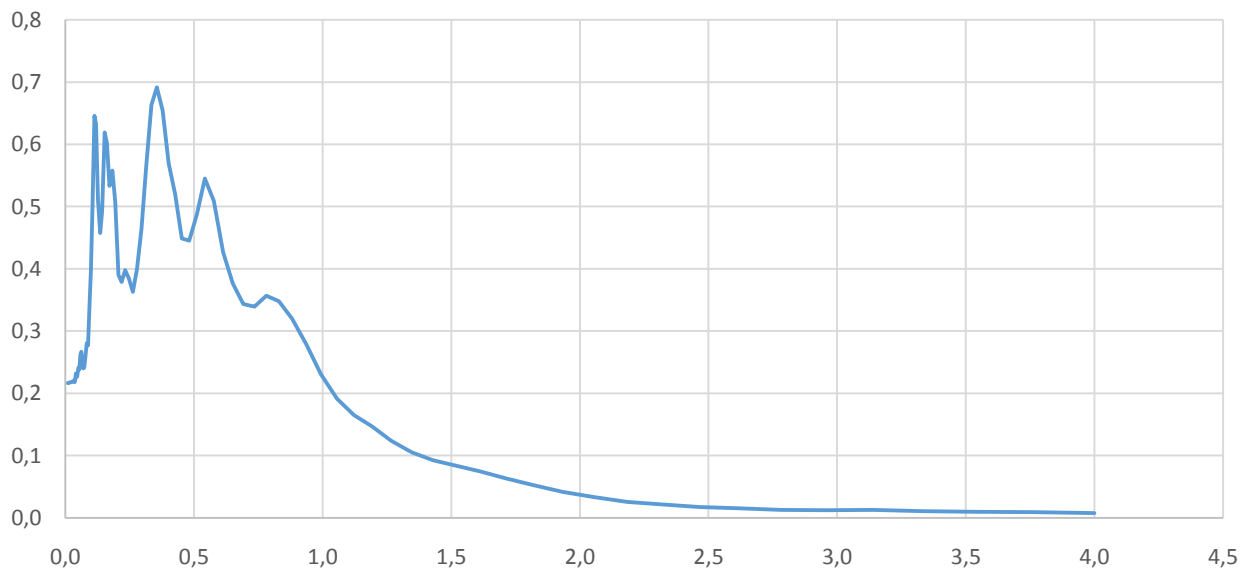
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 535



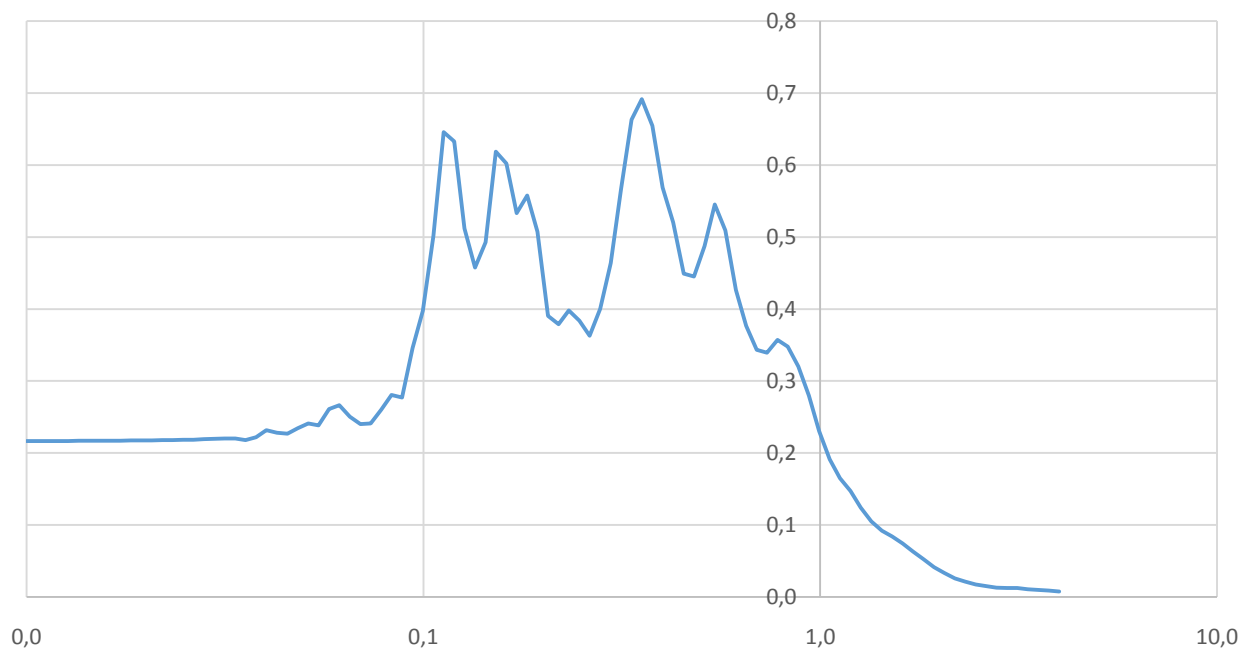
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 535



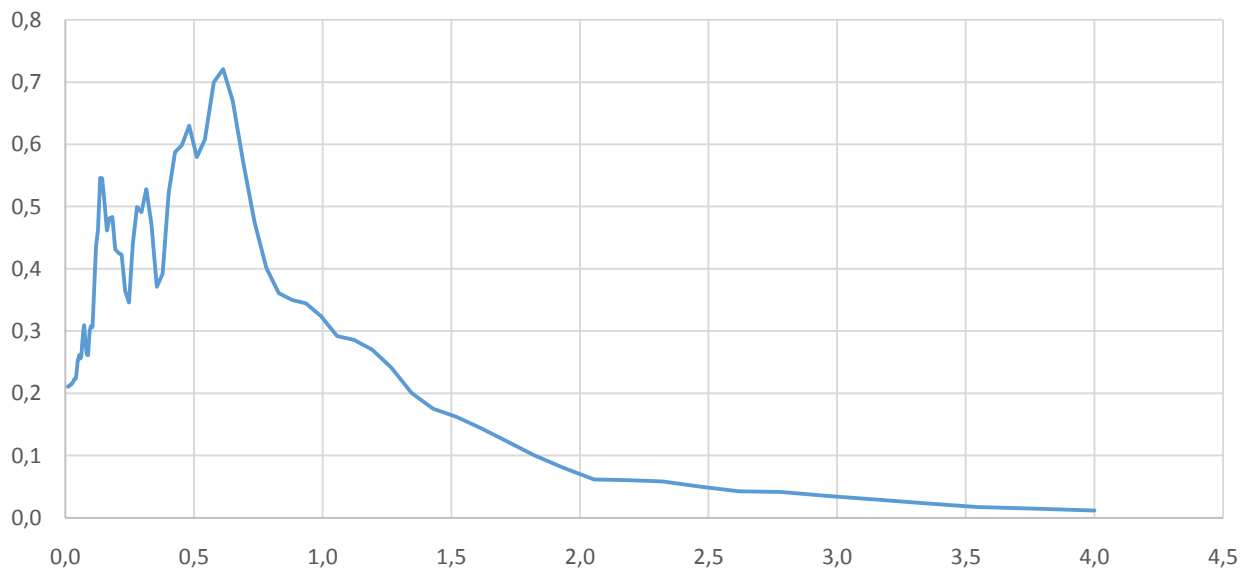
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 4



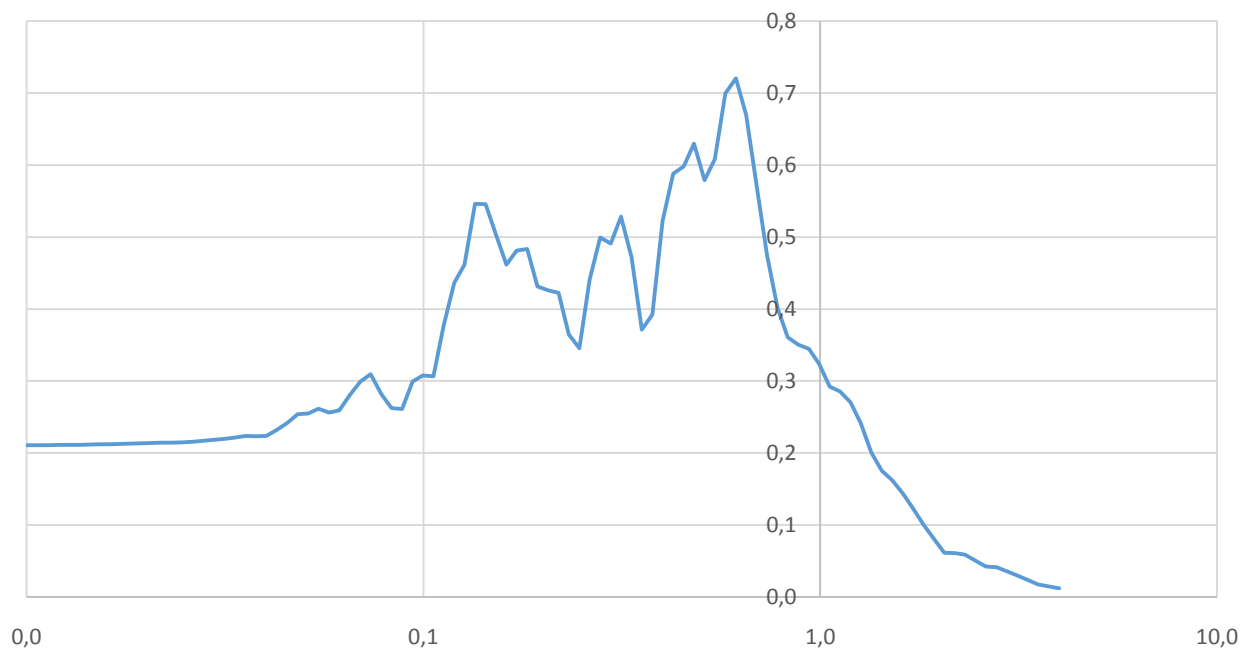
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 4



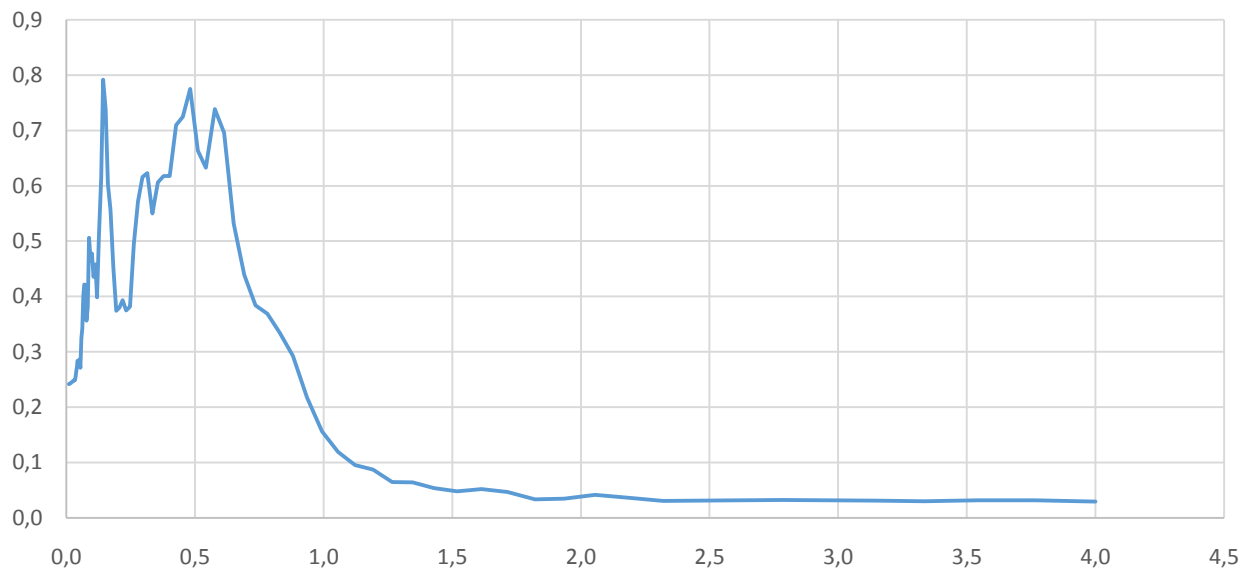
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 222



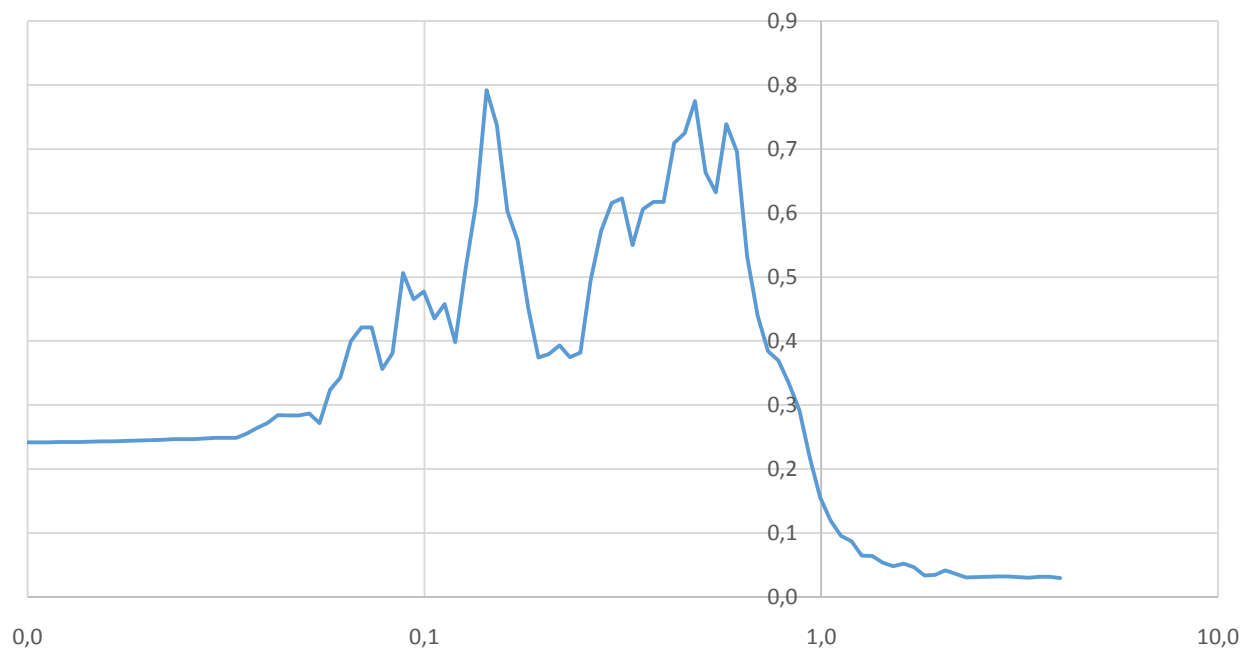
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 222



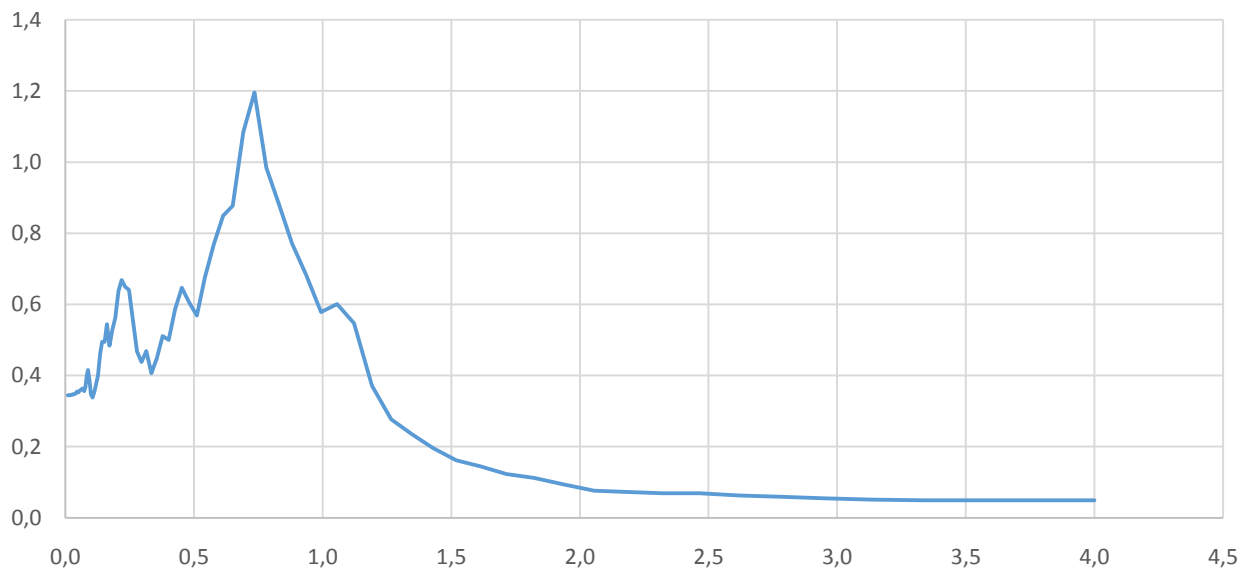
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 132



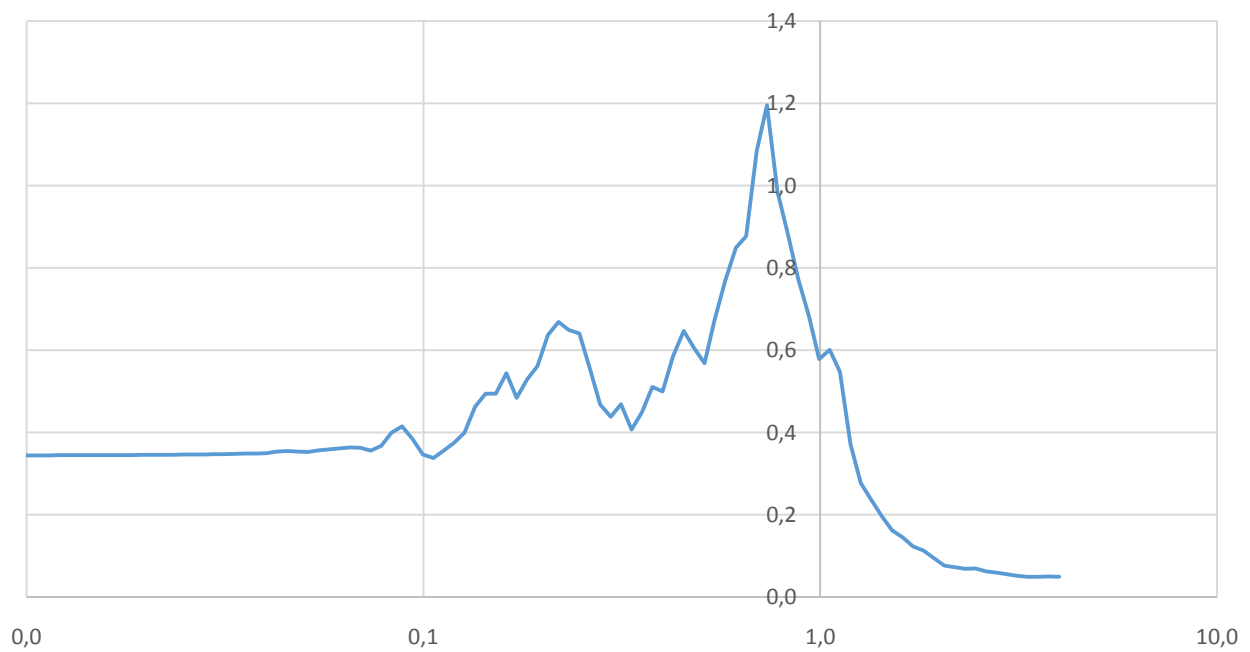
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 132



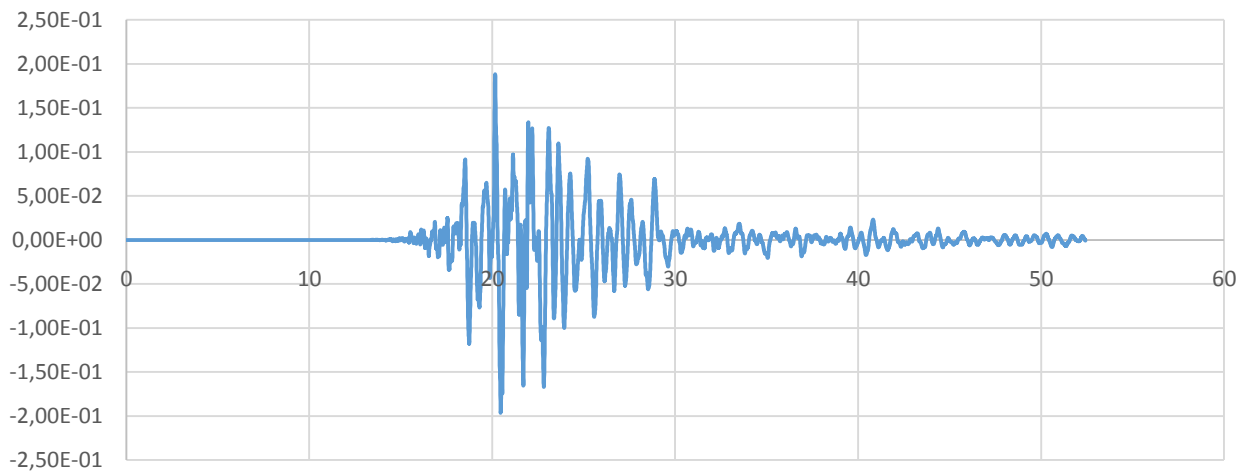
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 378



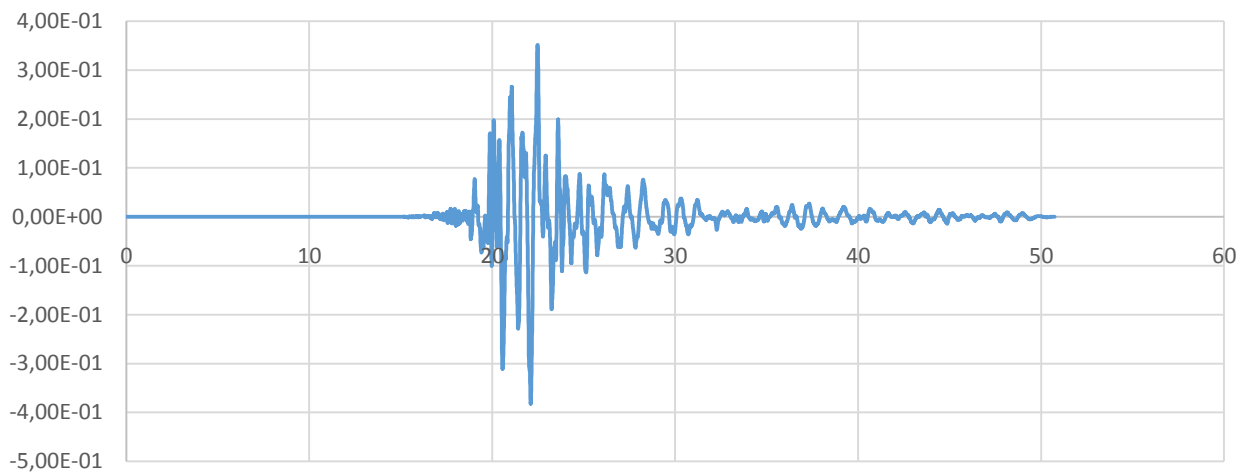
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 378



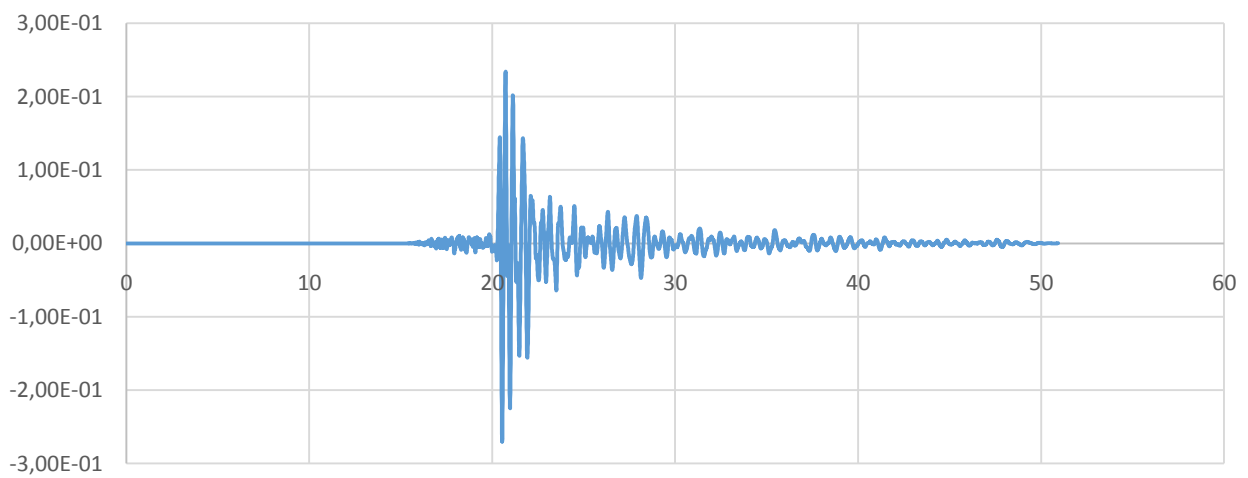
ACCELEROGRAMMA 1 / SCENARIO 281



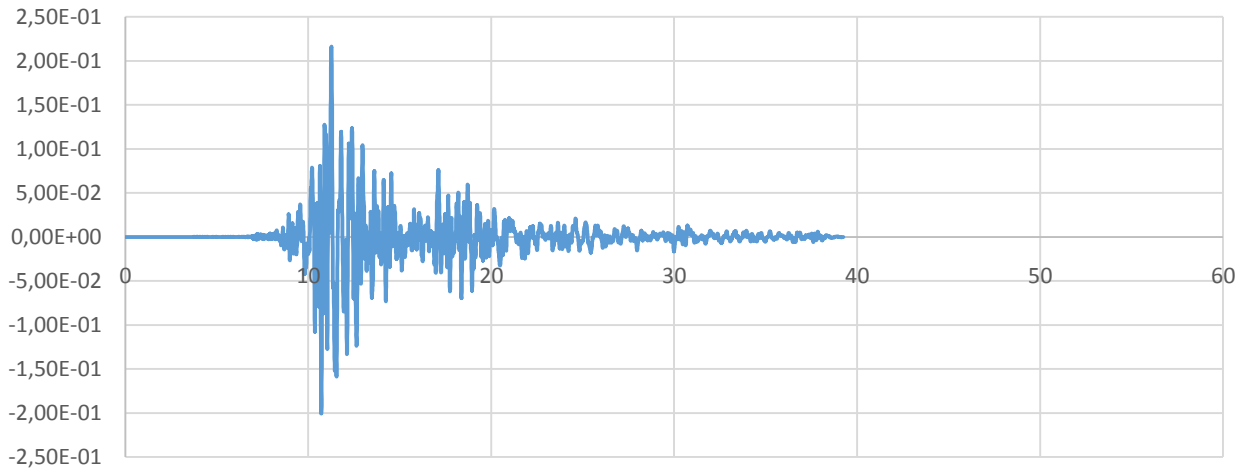
ACCELEROGRAMMA 2 / SCENARIO 534



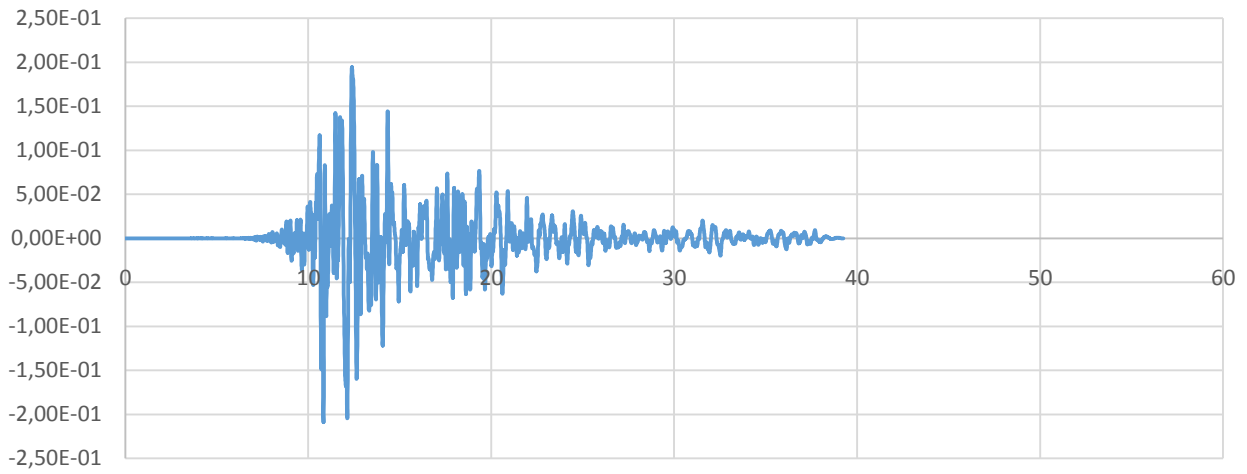
ACCELEROGRAMMA 3 / SCENARIO 535



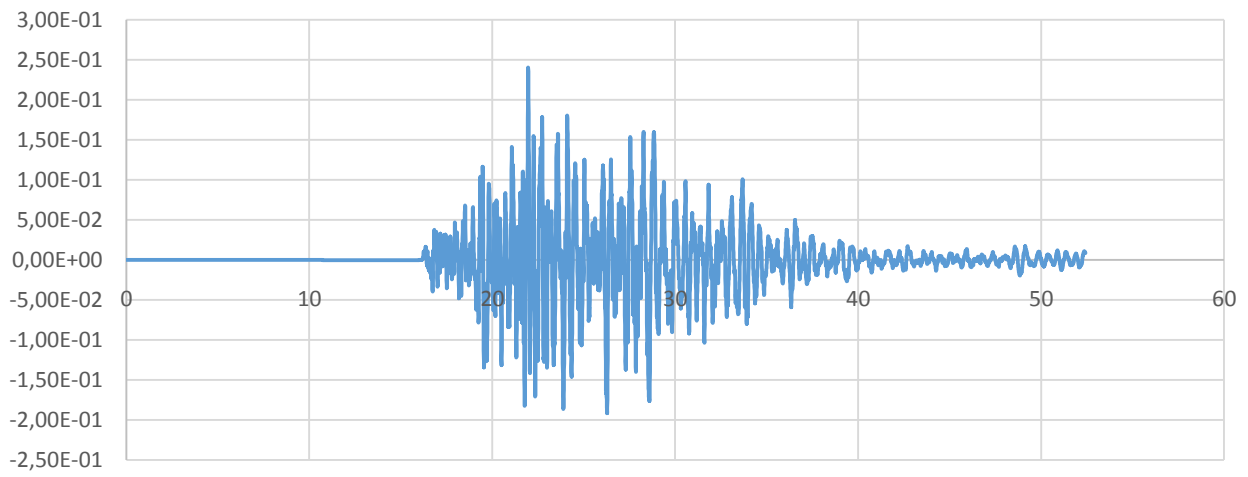
ACCELEROGRAMMA 4 / SCENARIO 4



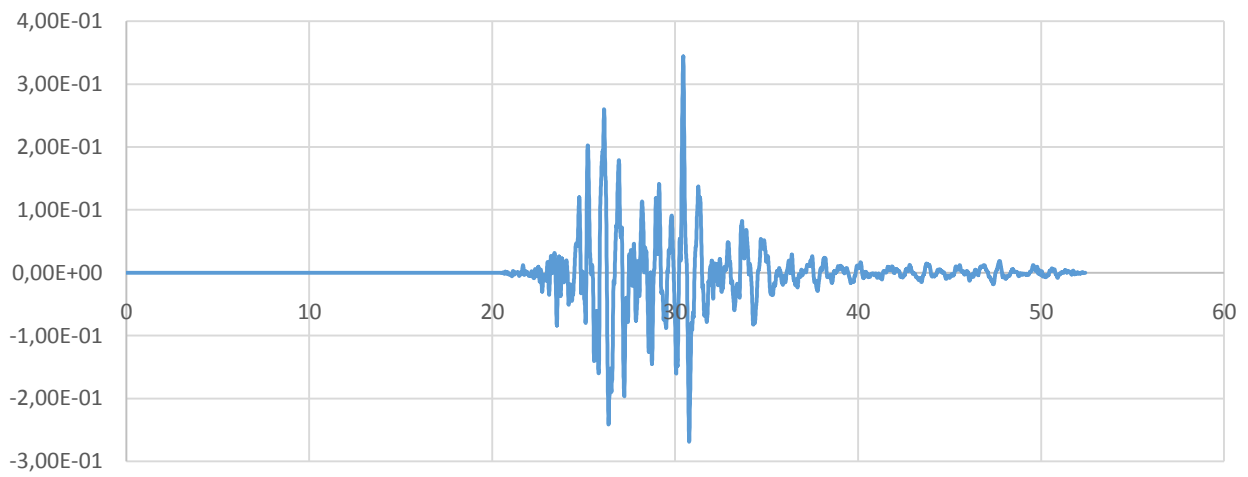
ACCELEROGRAMMA 5 / SCENARIO 222



ACCELEROGRAMMA 6 / SCENARIO 132



ACCELEROGRAMMA 7 / SCENARIO 378



9. MOPS 2011

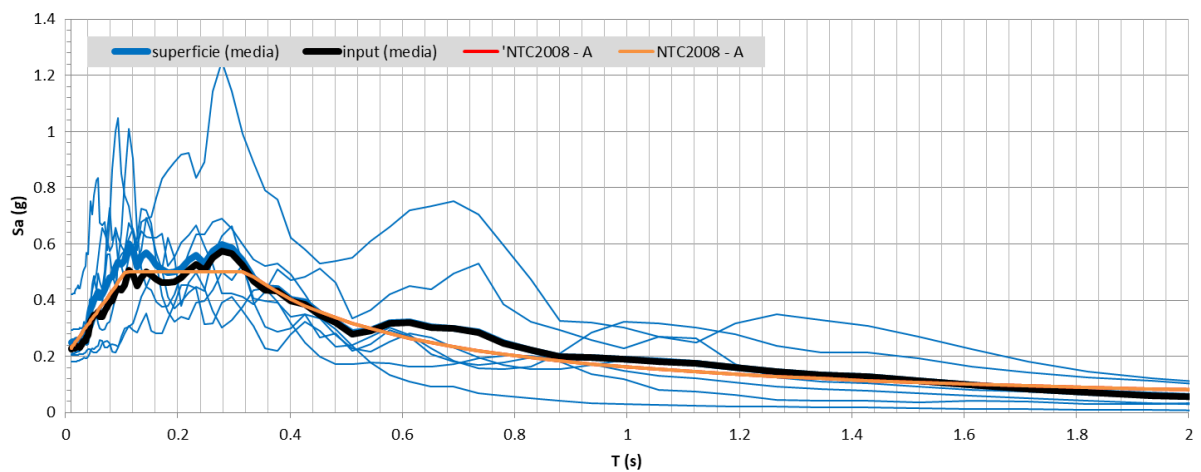
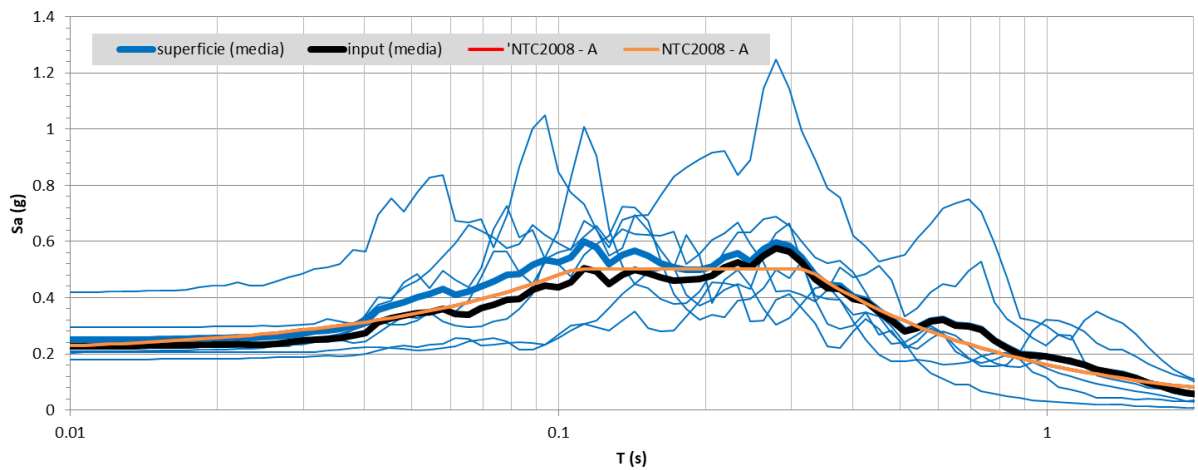
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.06	1.01	1.01
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.05	1.06	1.07
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.01	1.01	1.01
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.00	1.01	1.01

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

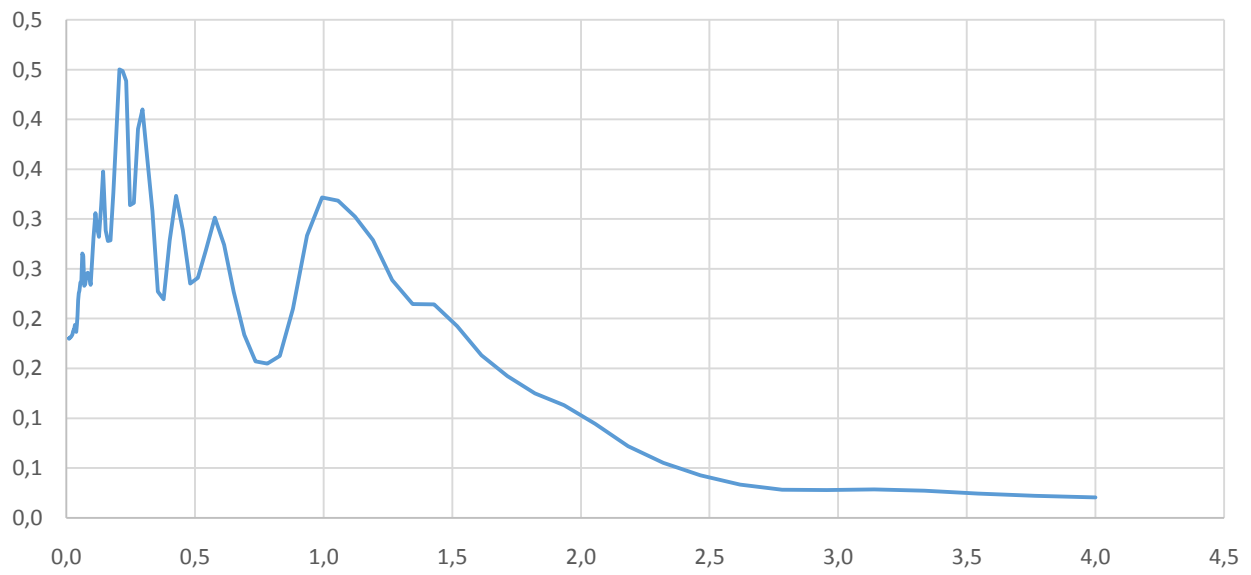
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

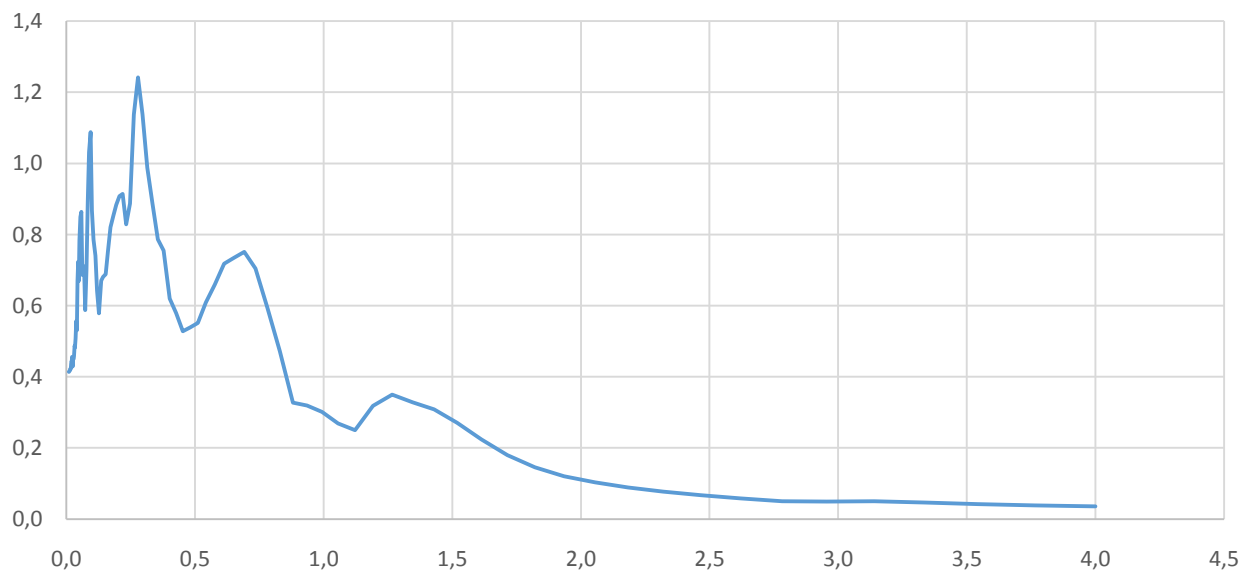
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



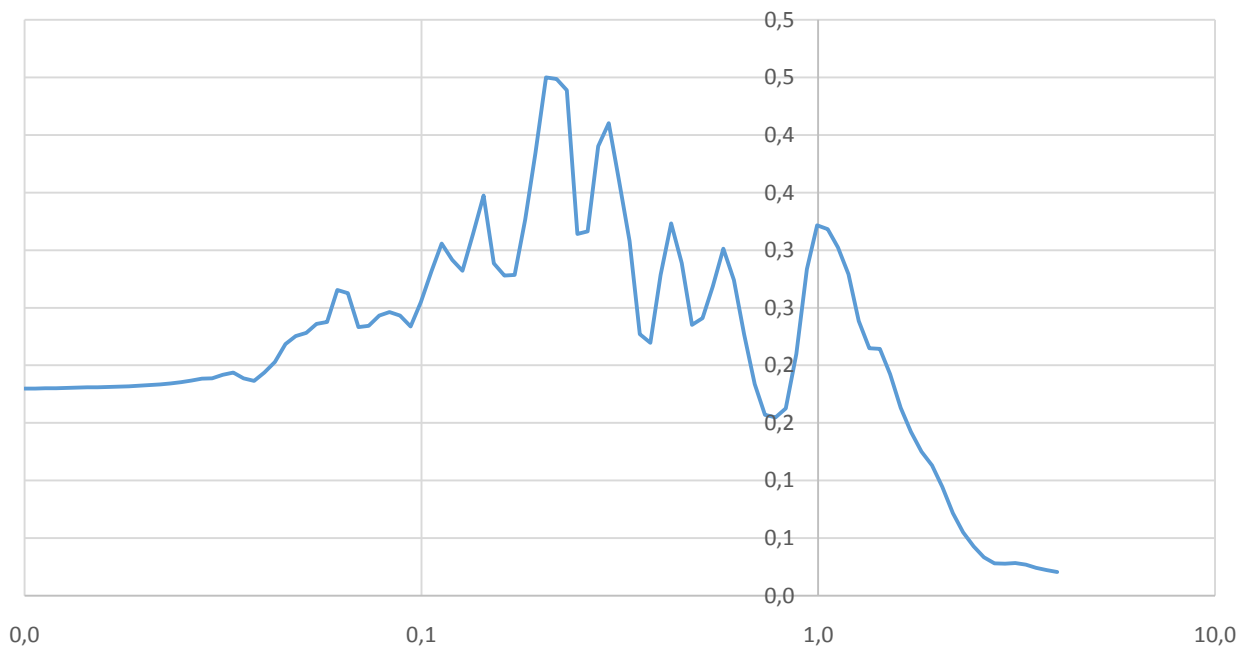
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 652



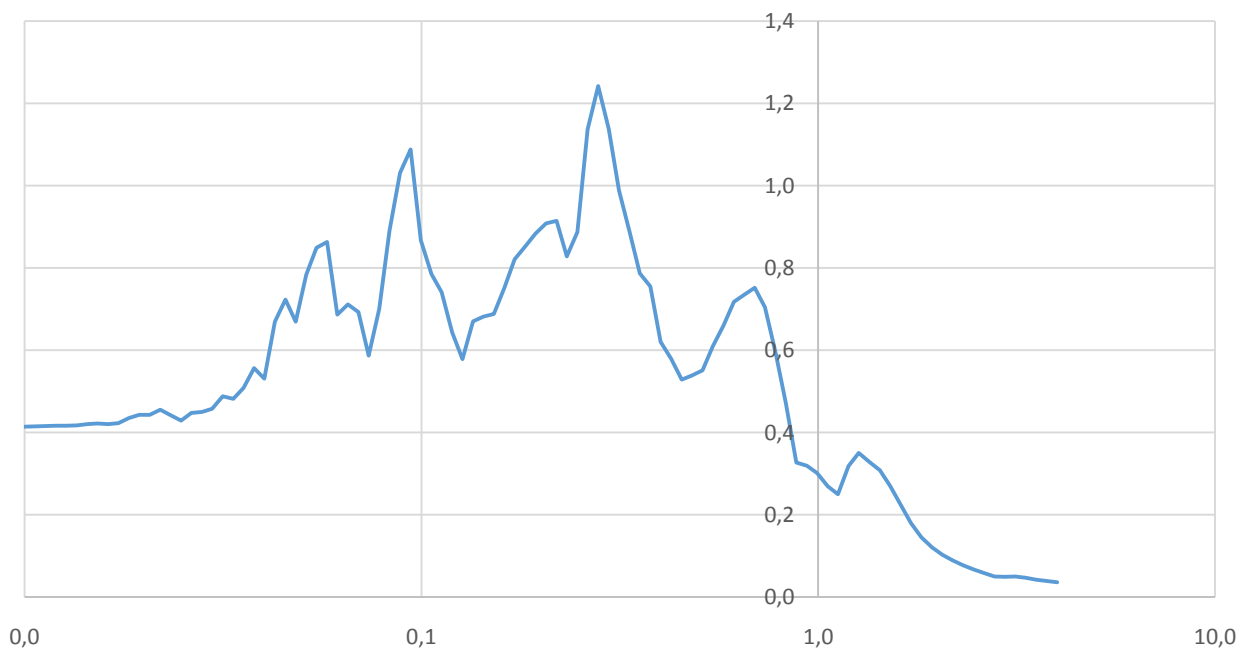
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 653



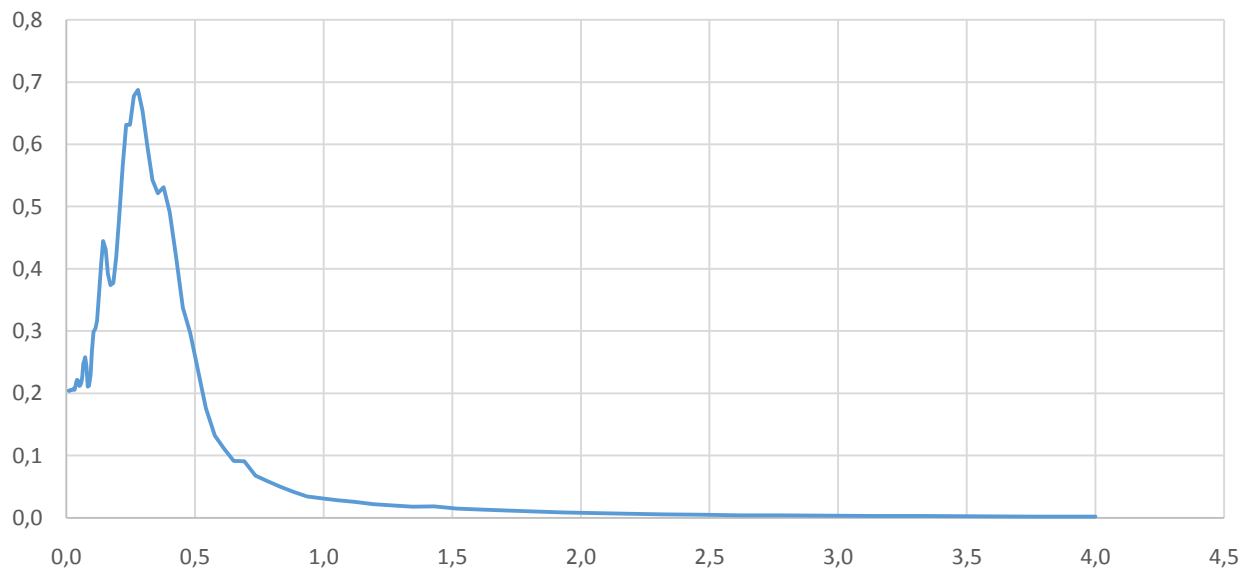
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 652



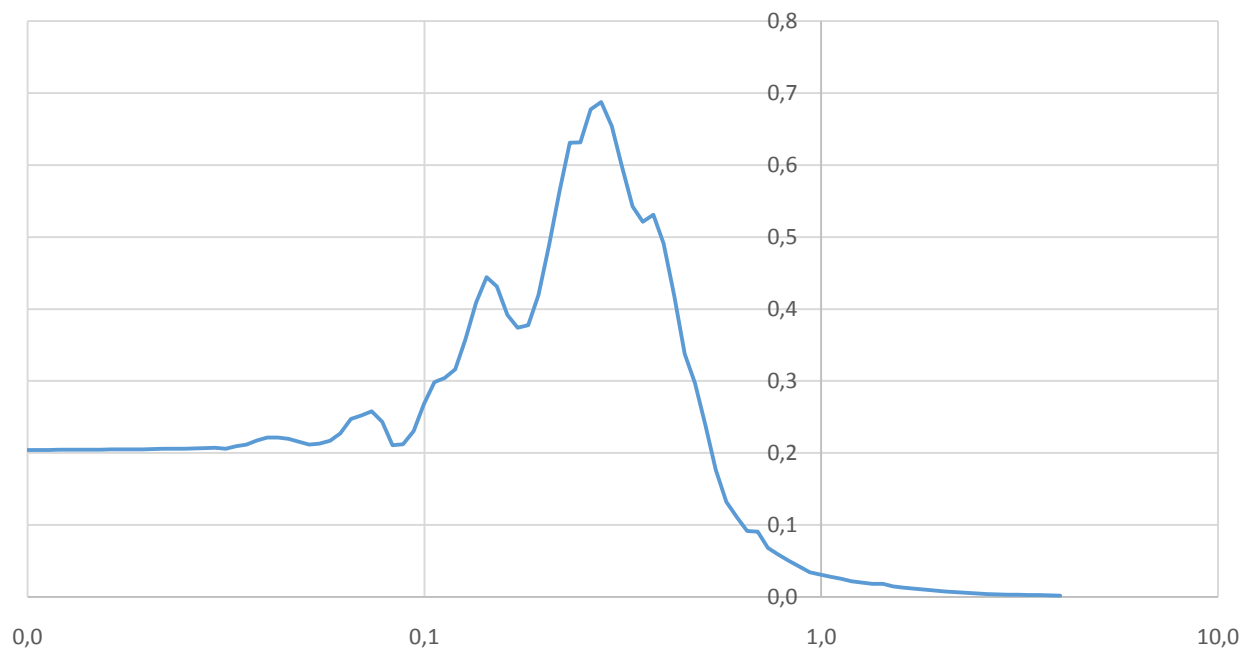
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 653



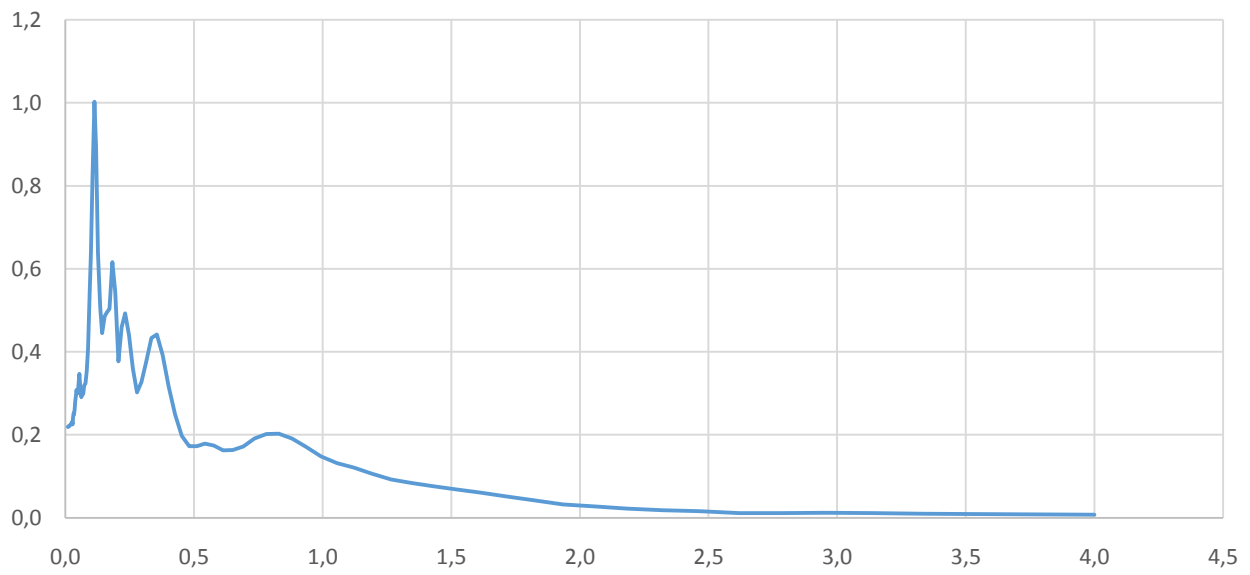
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 255



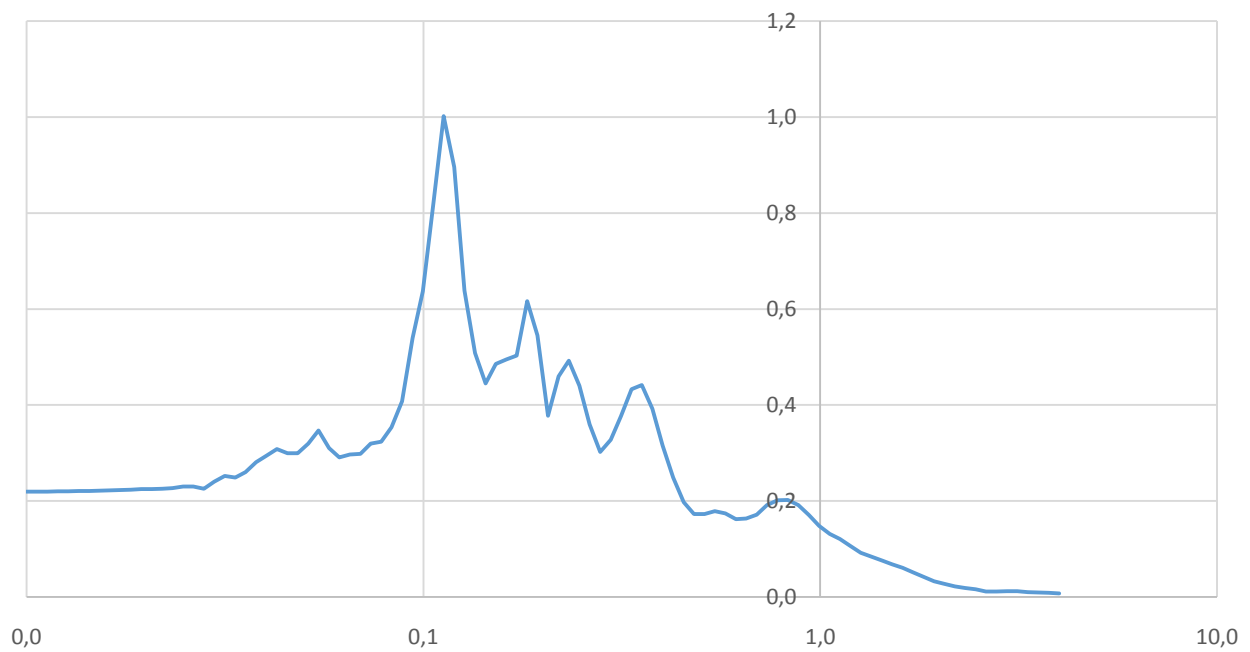
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 255



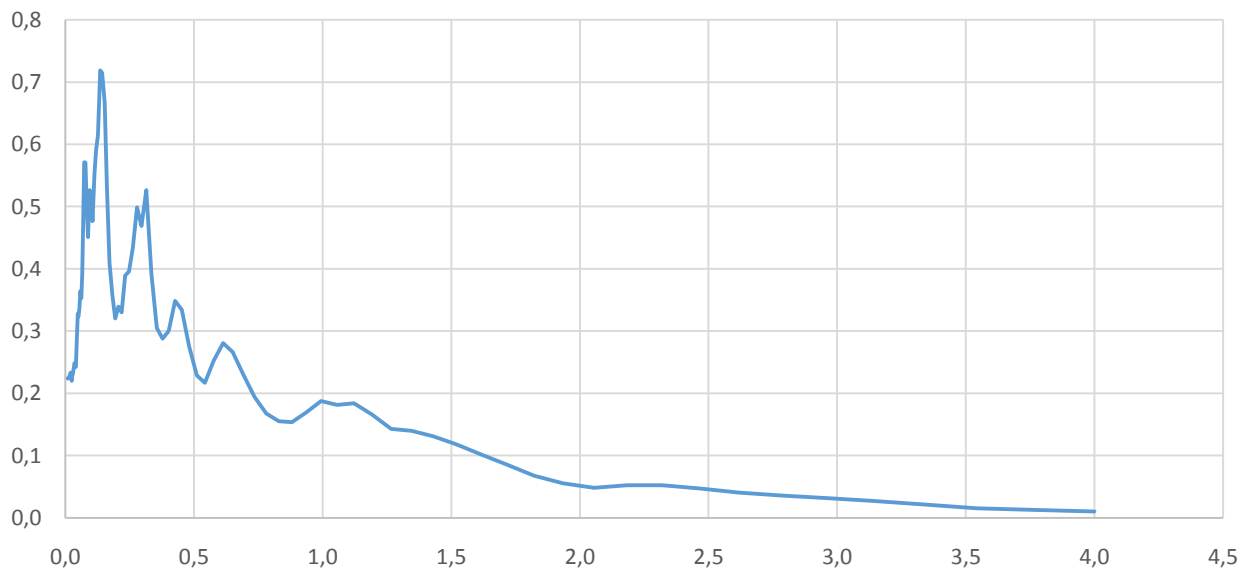
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 655



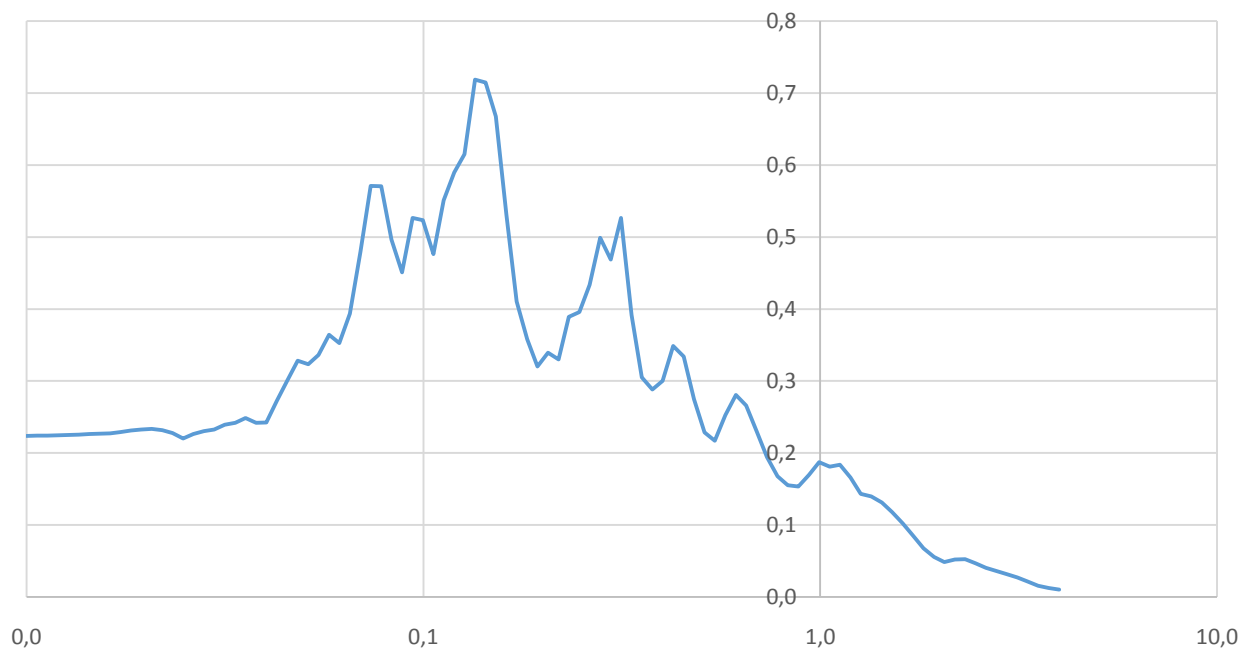
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 655



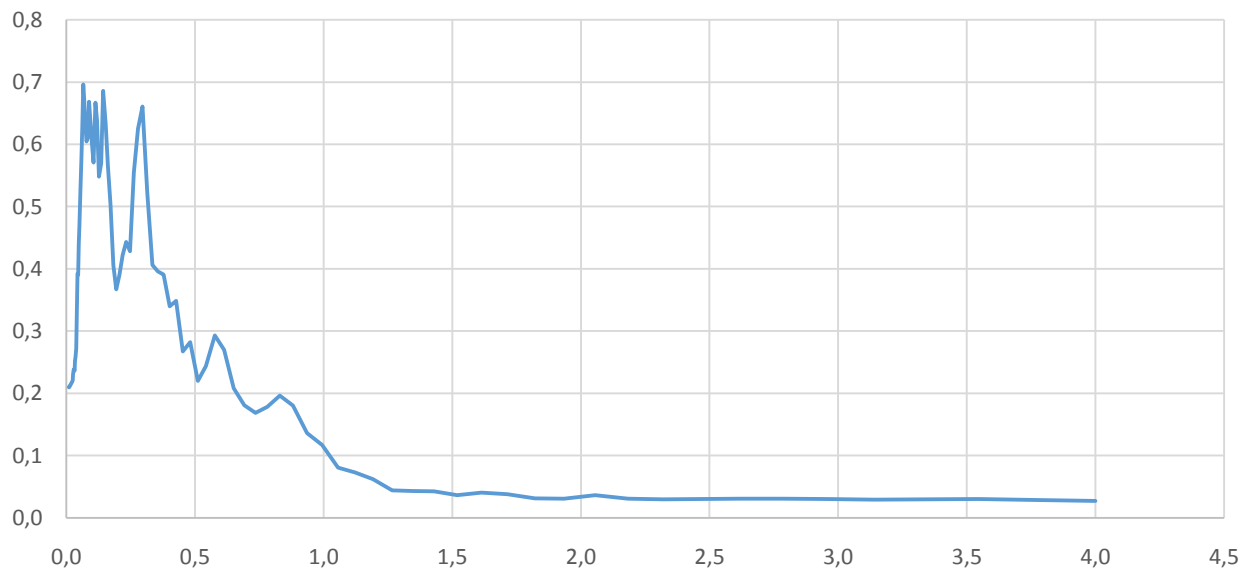
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 257



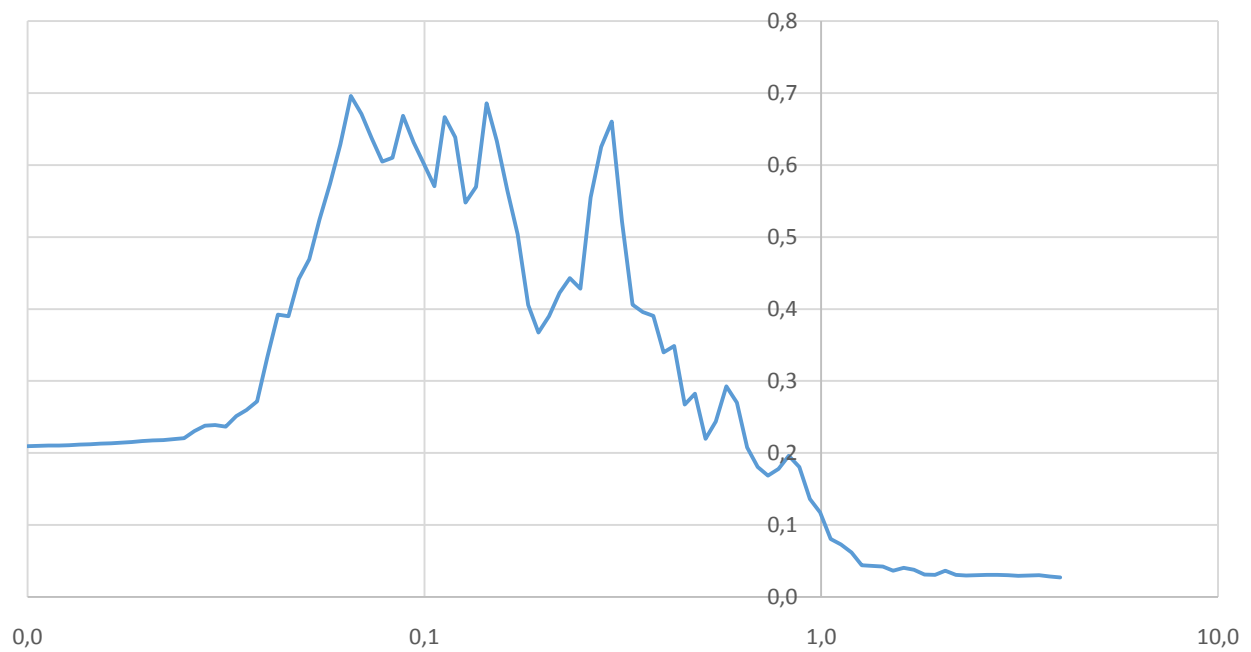
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 257



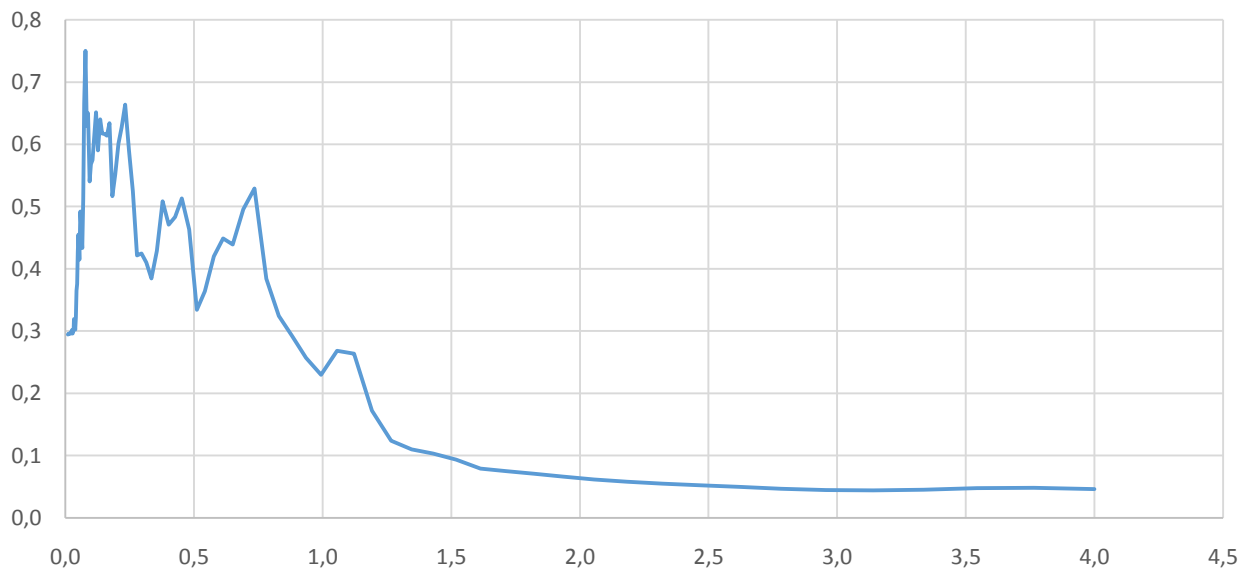
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 657



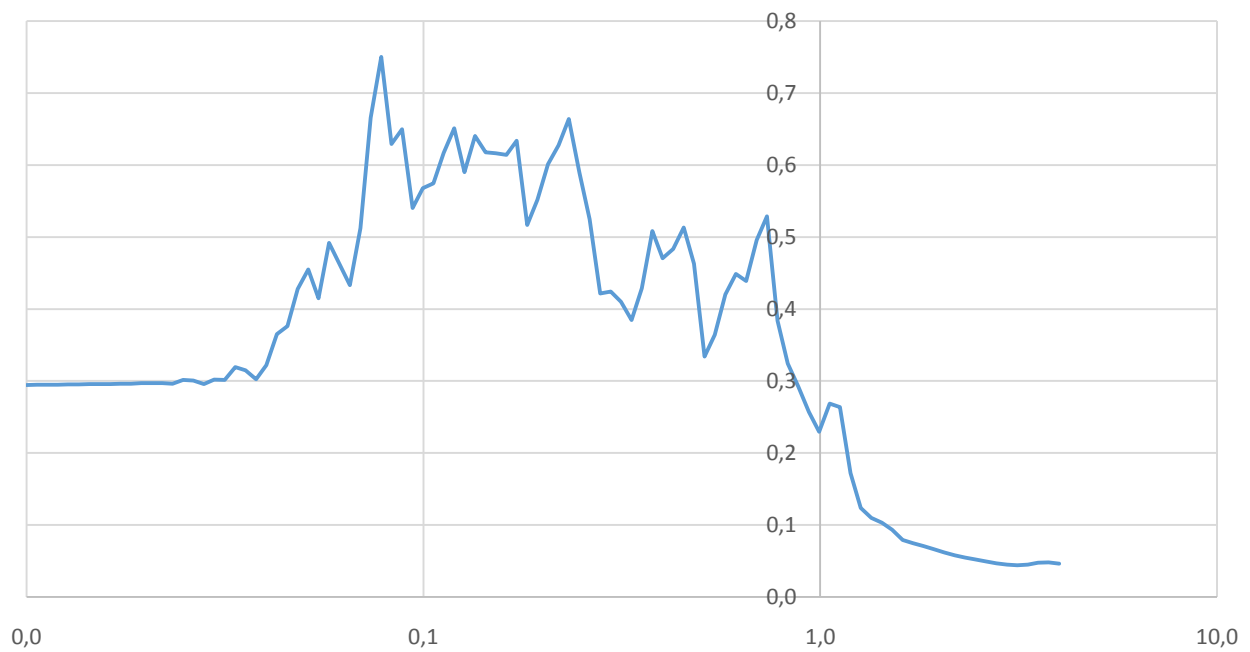
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 657



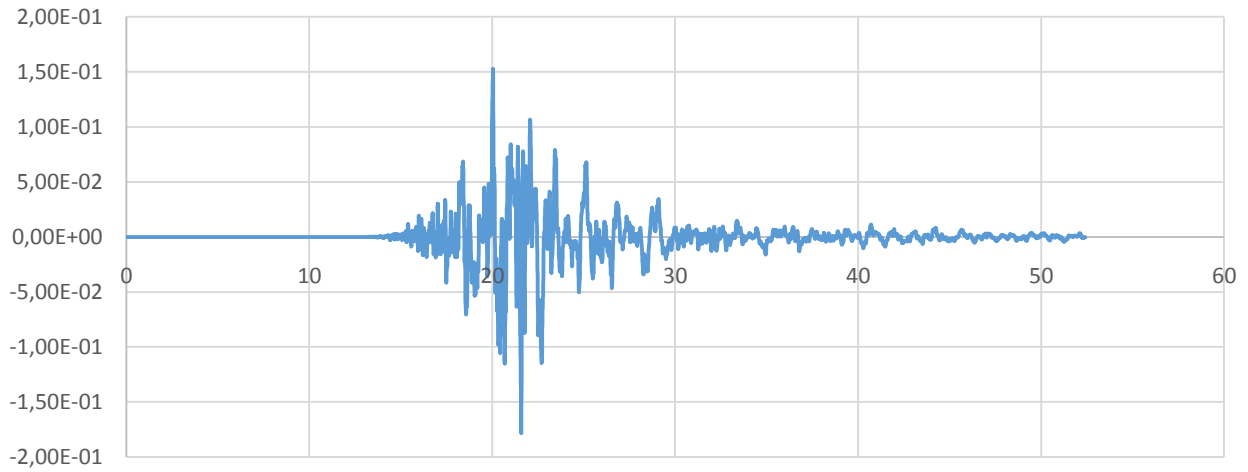
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 259



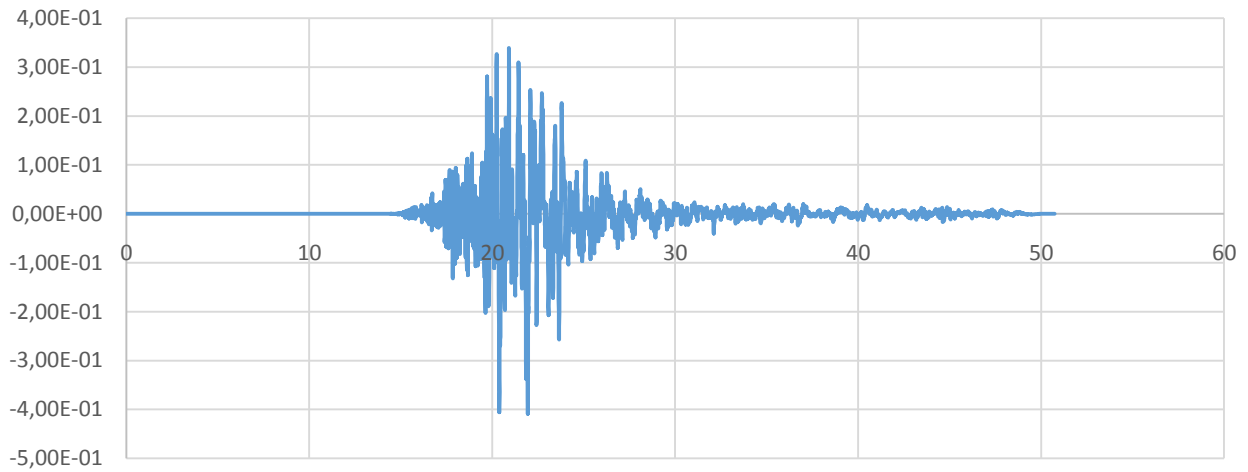
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 259



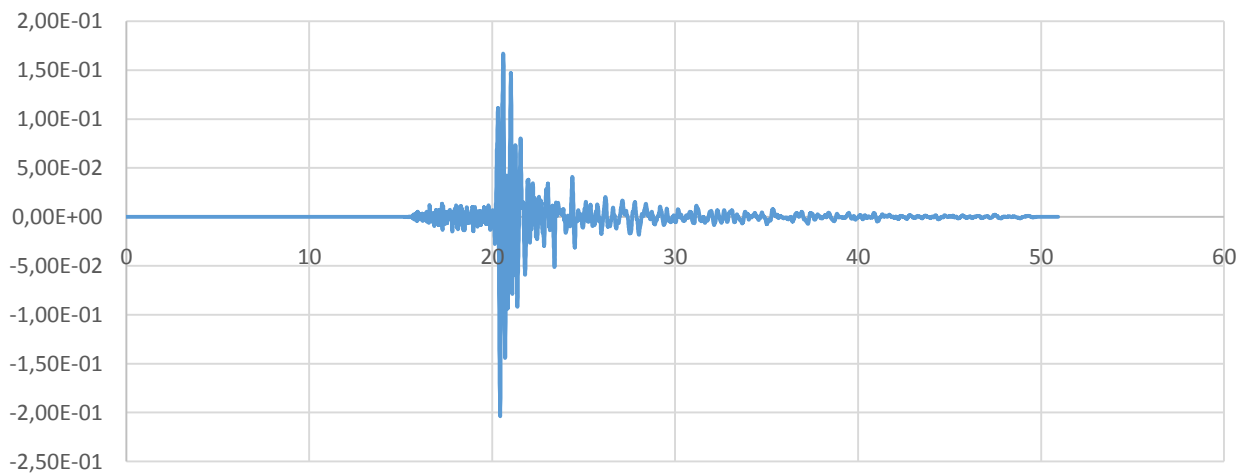
ACCELEROGRAMMA 1 / SCENARIO 652



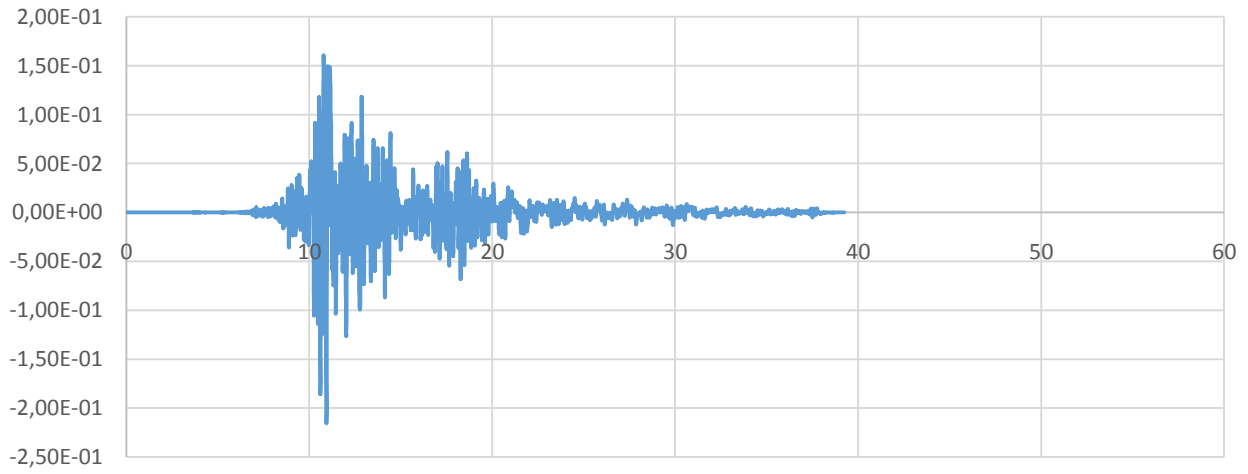
ACCELEROGRAMMA 2 / SCENARIO 653



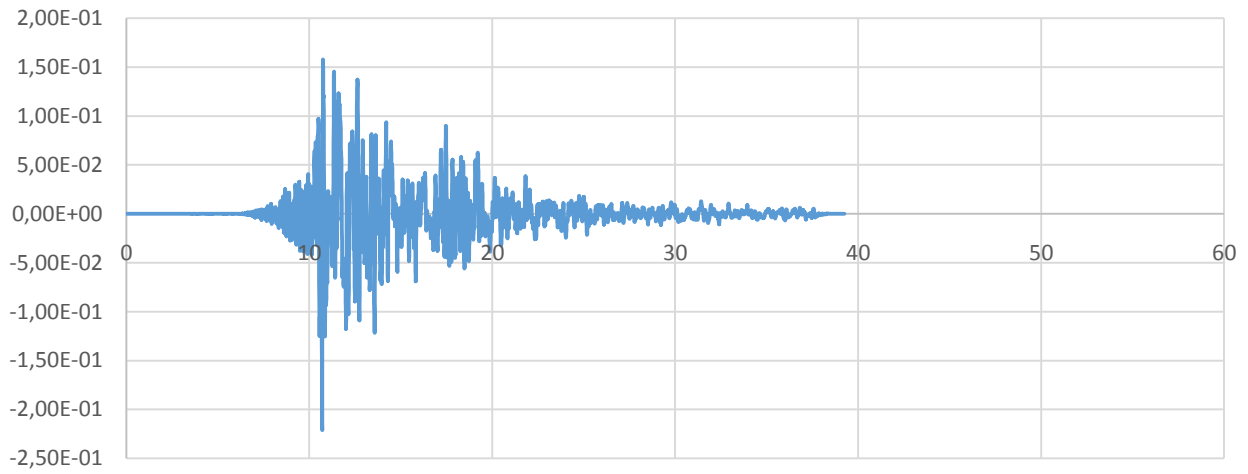
ACCELEROGRAMMA 3 / SCENARIO 255



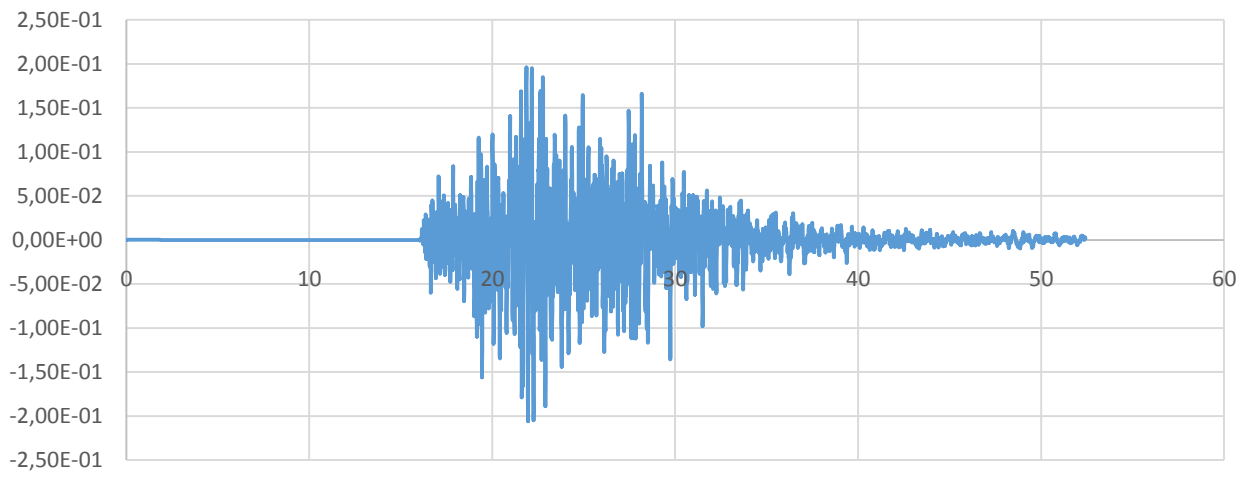
ACCELEROGRAMMA 4 / SCENARIO 655



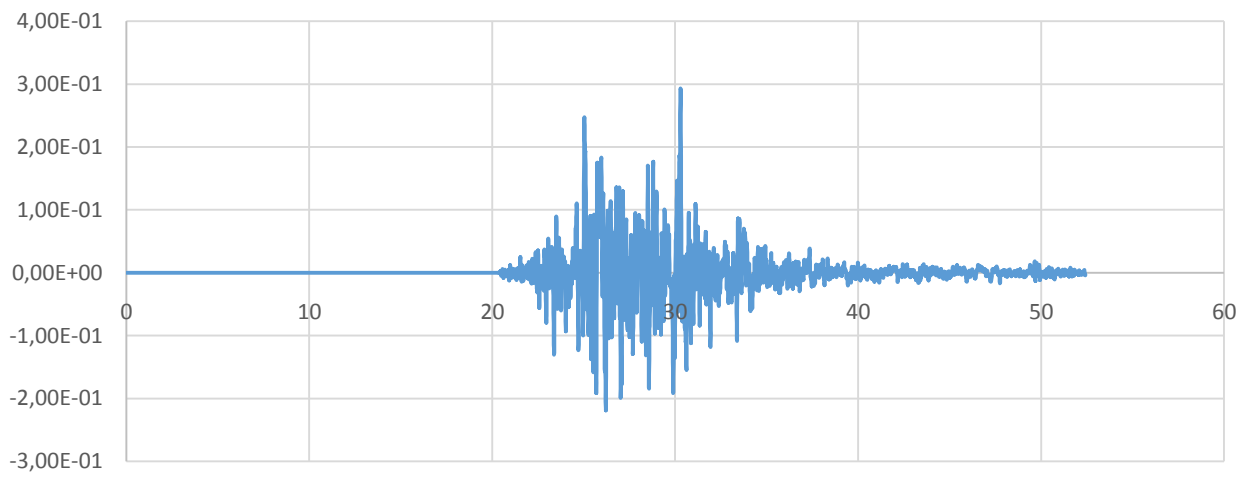
ACCELEROGRAMMA 5 / SCENARIO 257



ACCELEROGRAMMA 6 / SCENARIO 657



ACCELEROGRAMMA 7 / SCENARIO 259



10. MOPS 2012

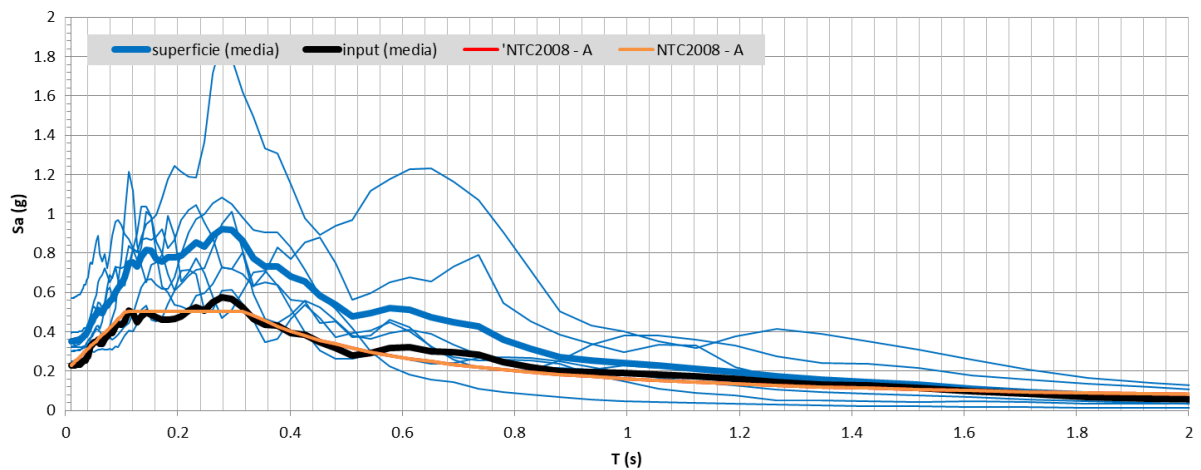
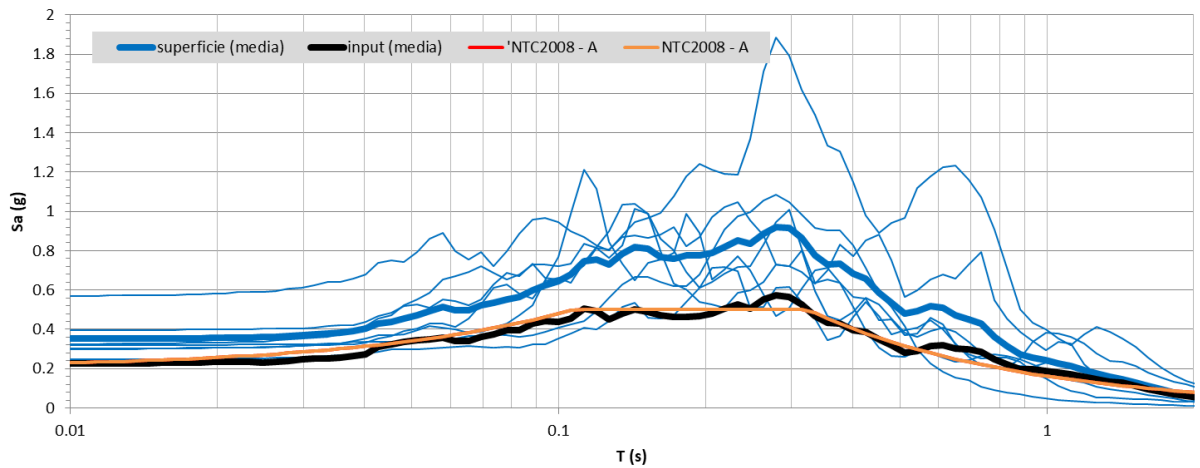
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.65	1.59	1.38
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.62	1.65	1.68
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.51	1.59	1.67
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.27	1.38	1.50

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

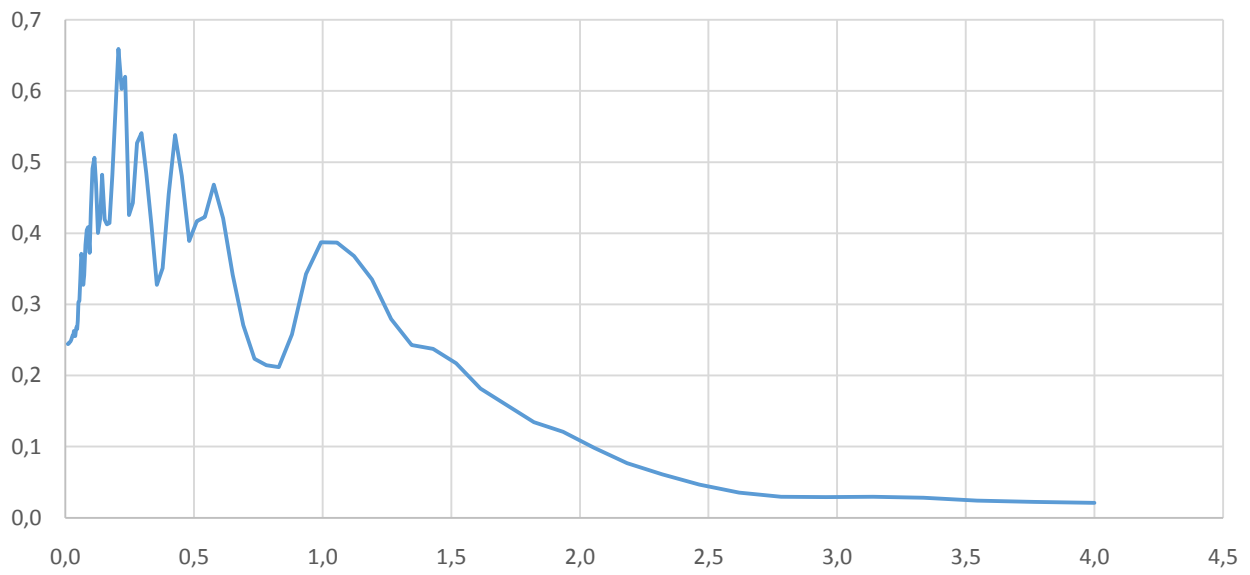
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

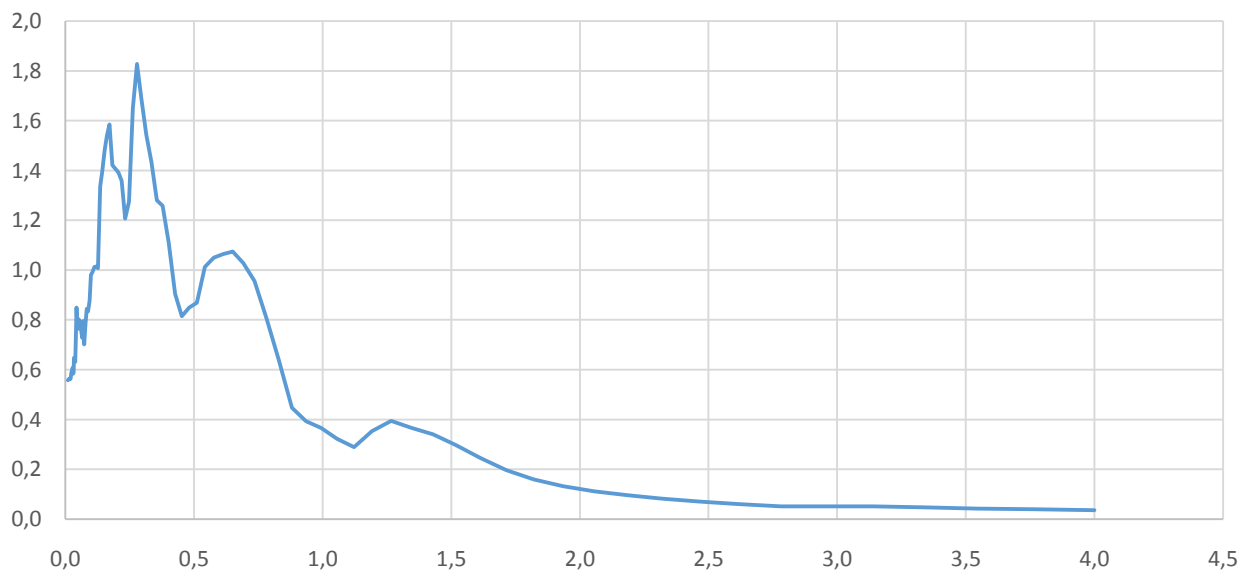
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



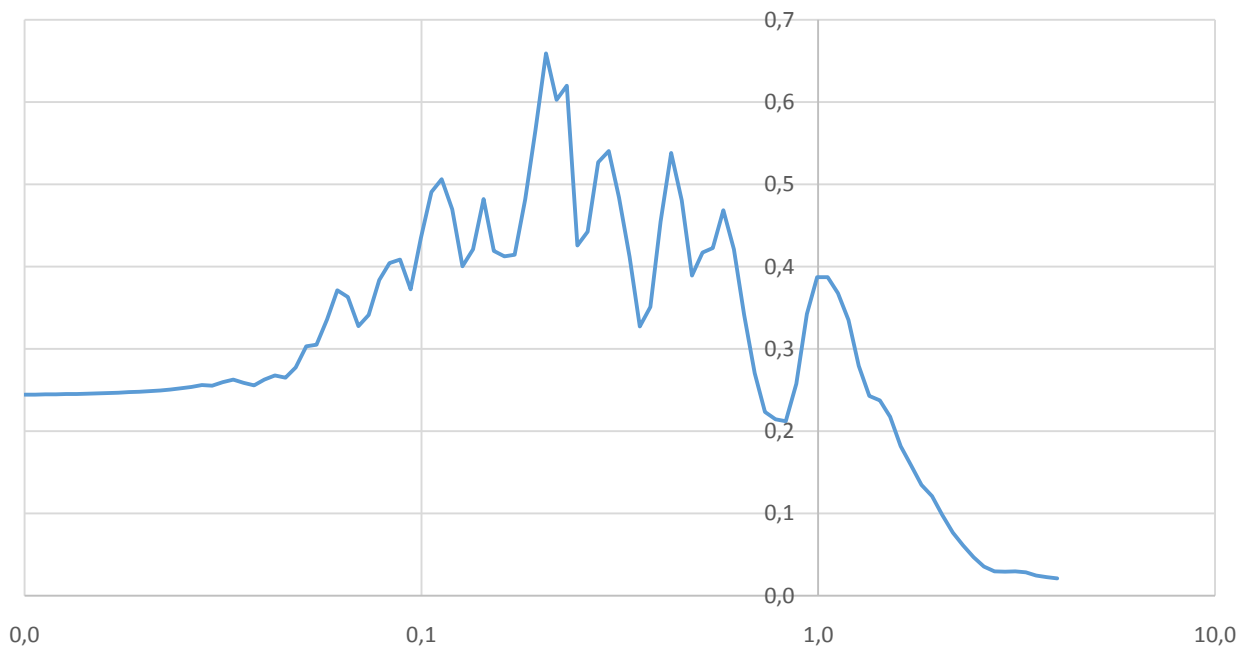
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 575



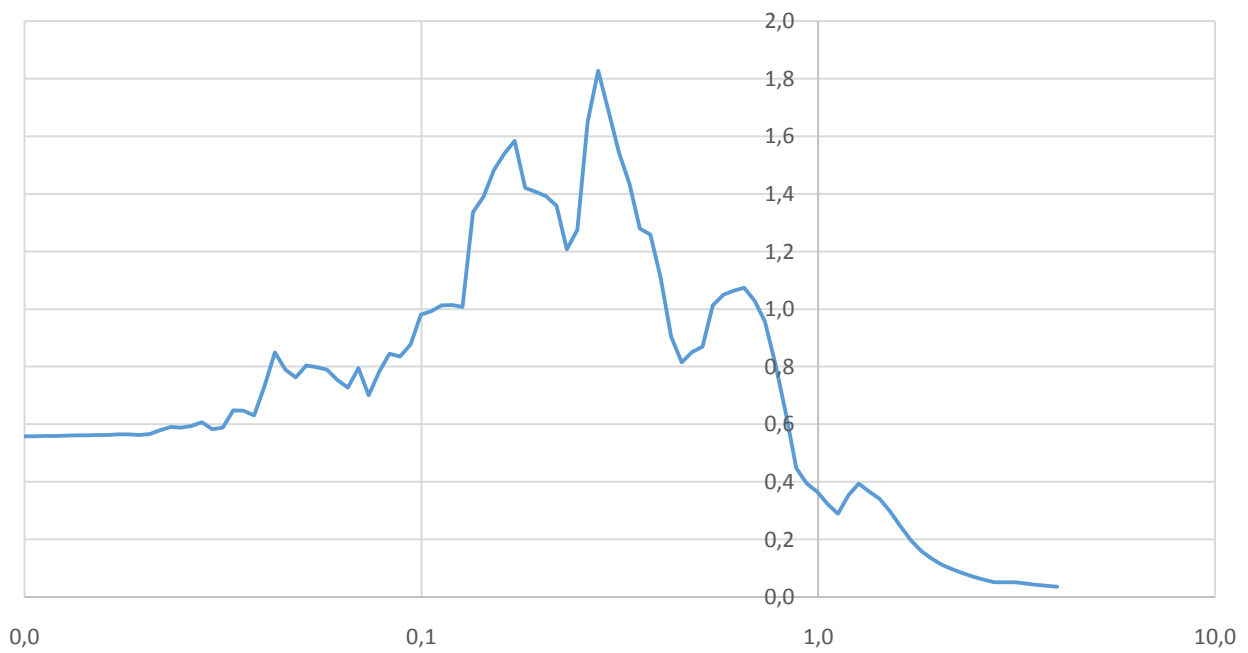
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 44



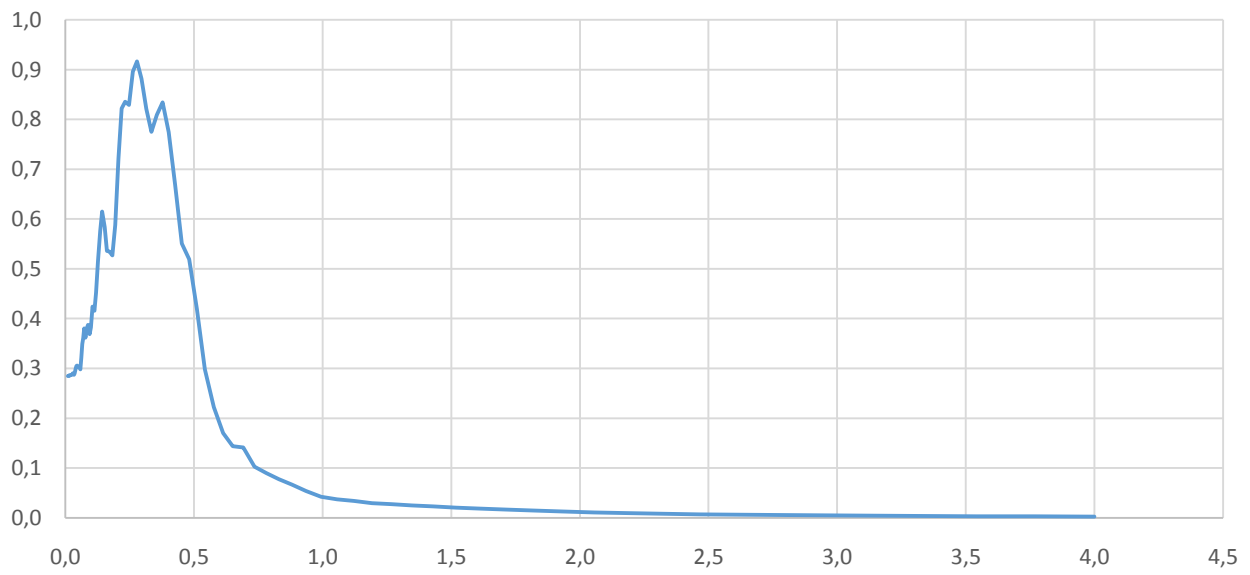
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 575



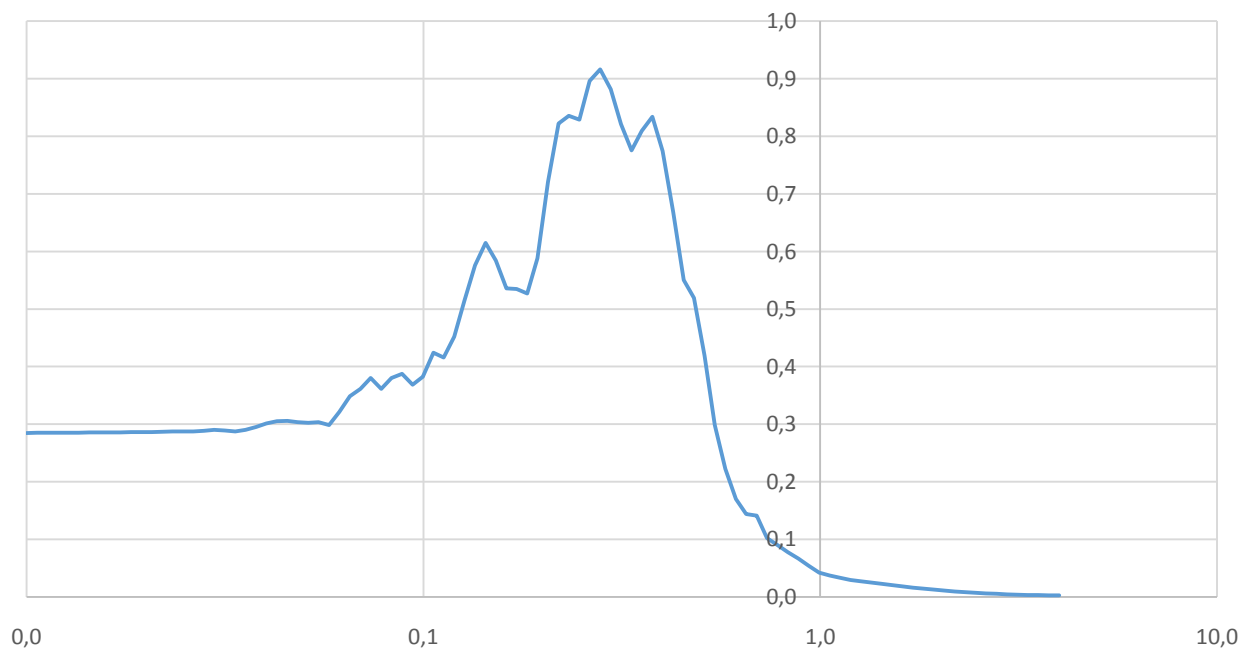
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 44



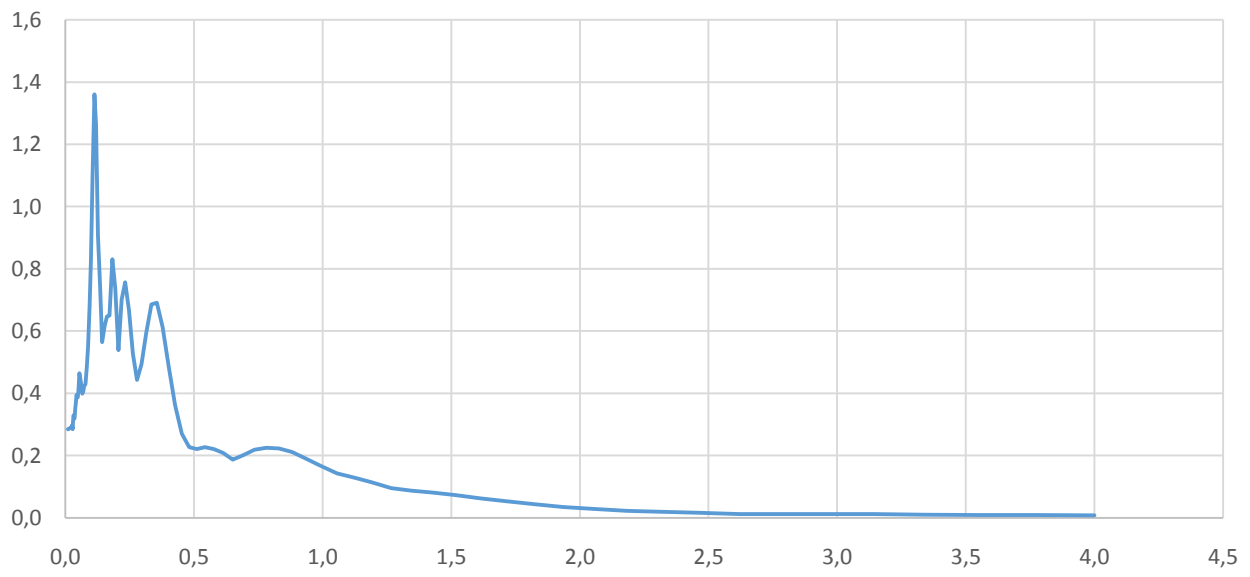
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 577



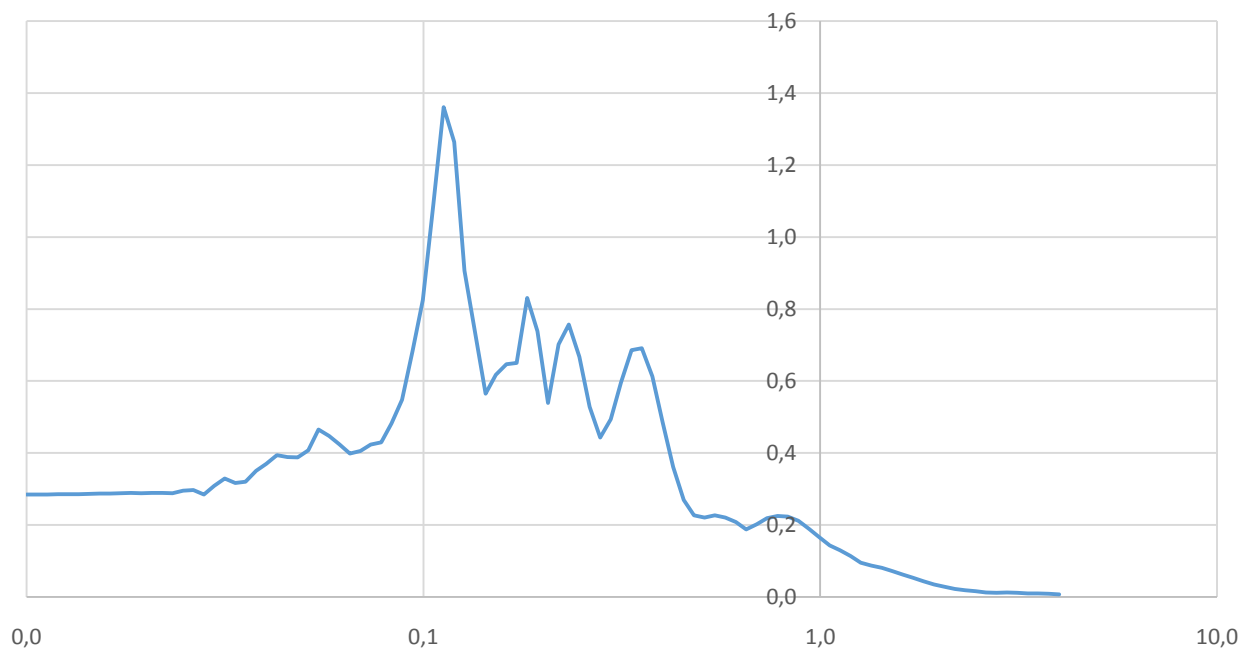
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 577



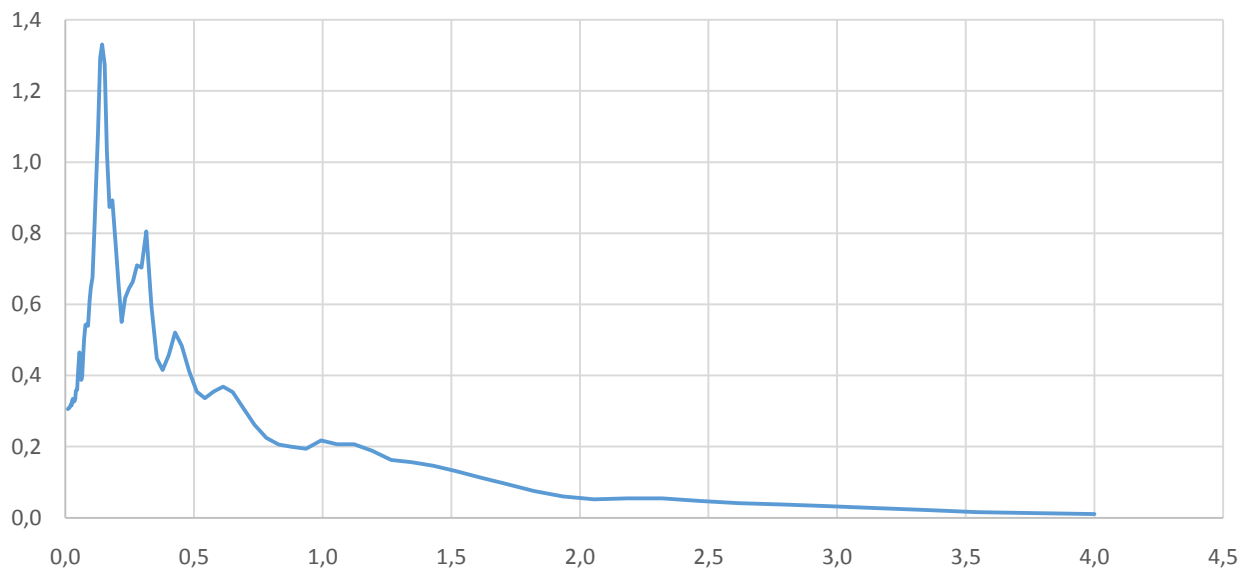
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 25



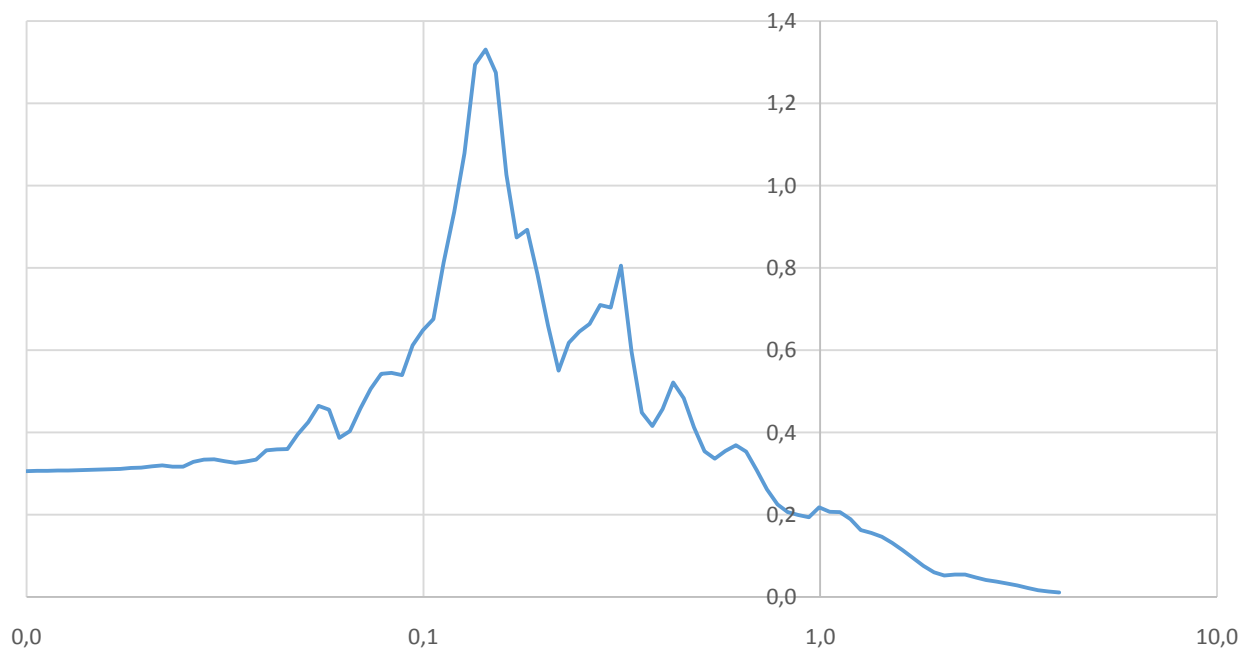
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 25



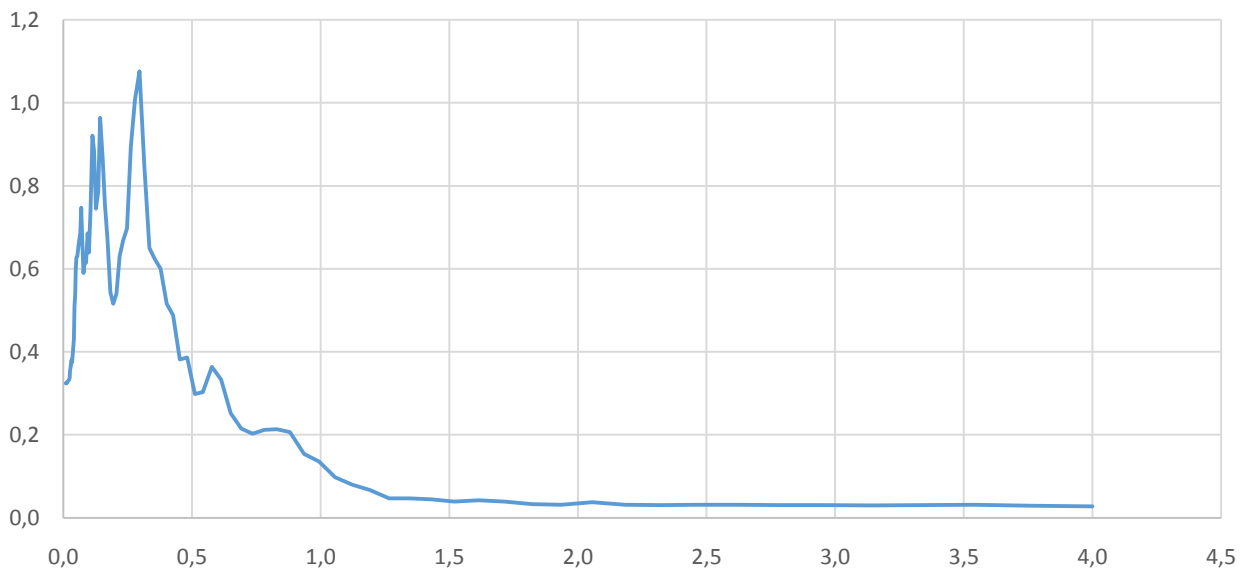
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 264



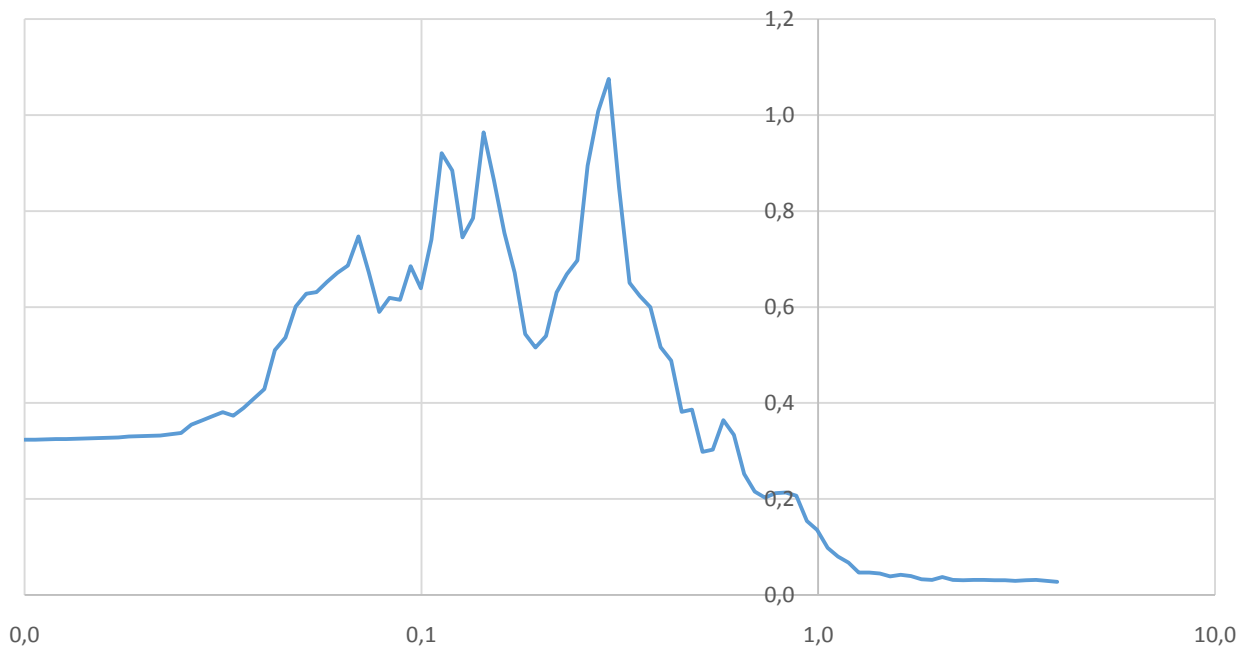
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 264



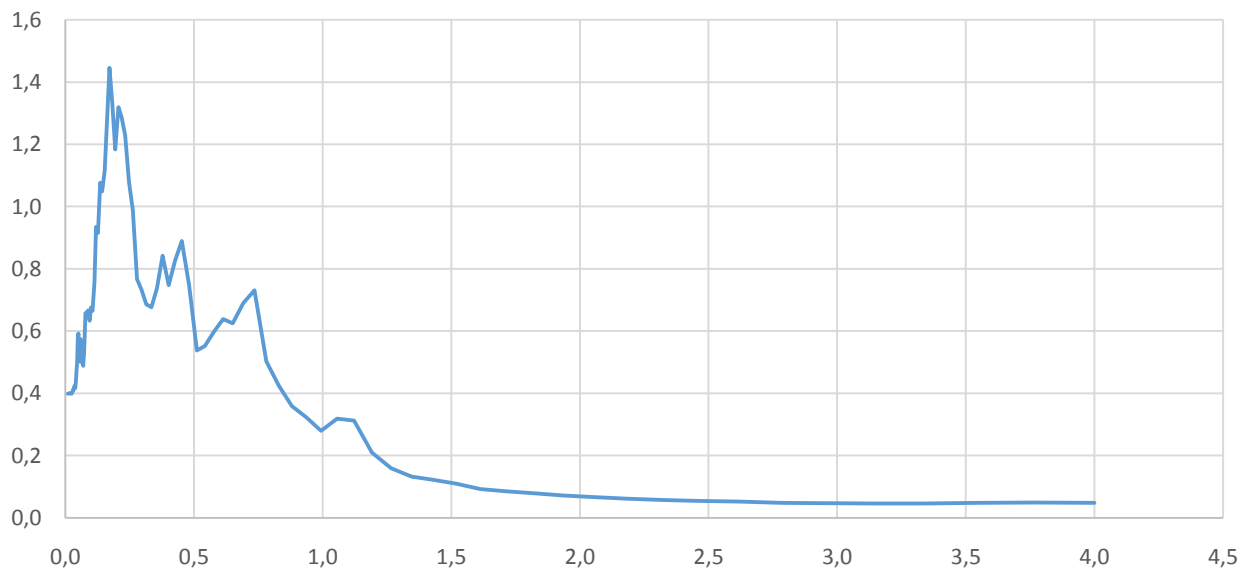
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 27



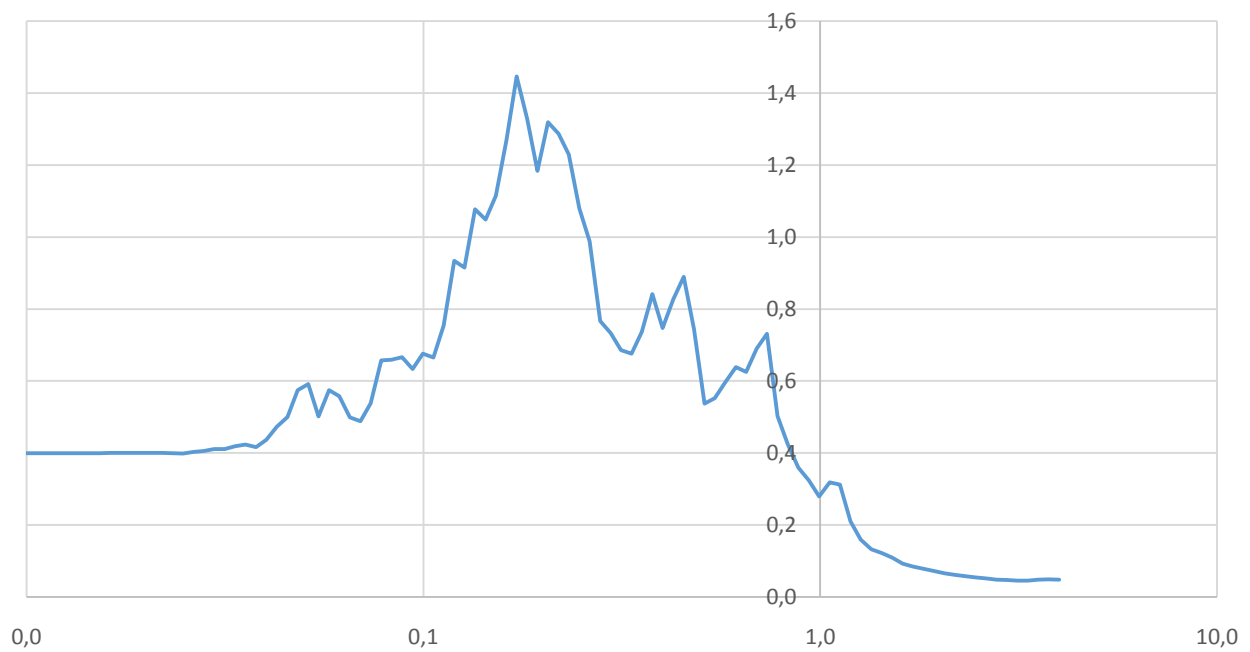
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 27



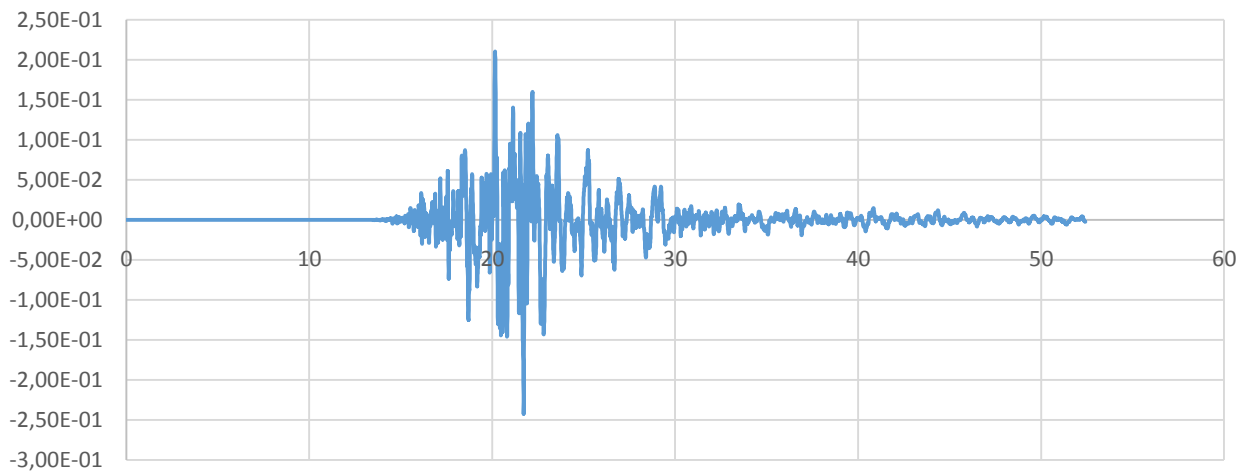
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 63



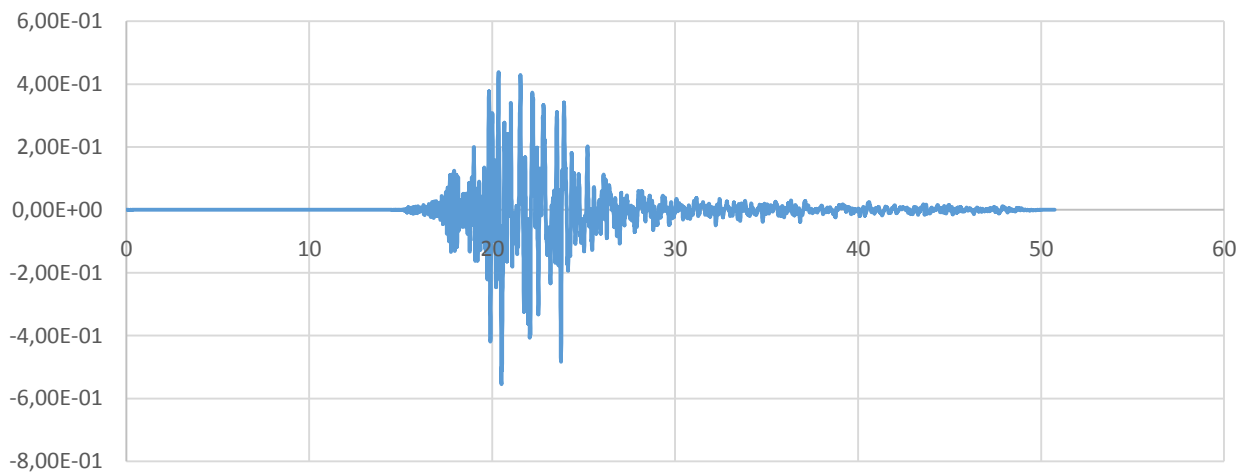
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 63



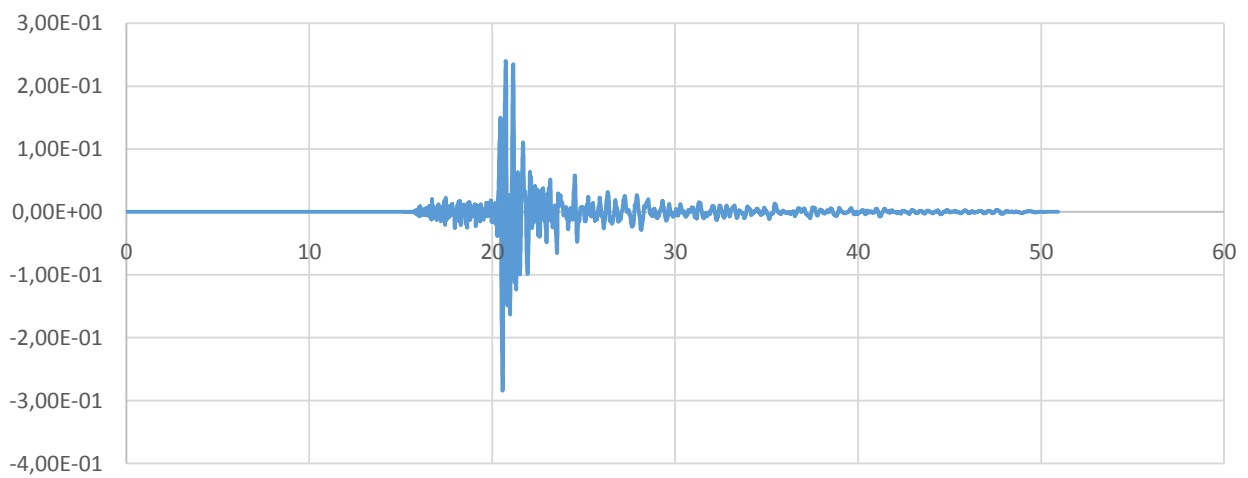
ACCELEROGRAMMA 1 / SCENARIO 575



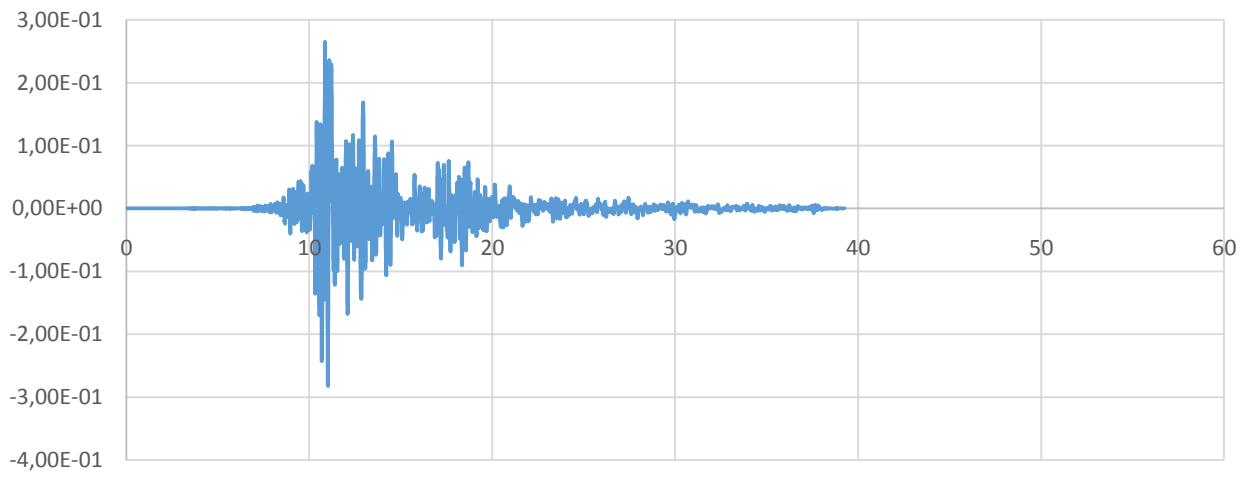
ACCELEROGRAMMA 2 / SCENARIO 44



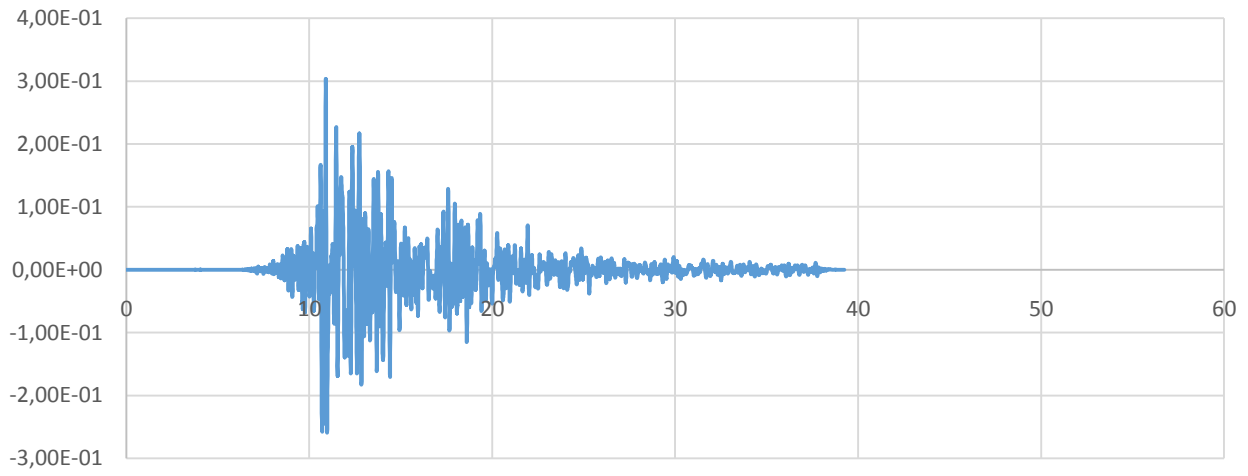
ACCELEROGRAMMA 3 / SCENARIO 577



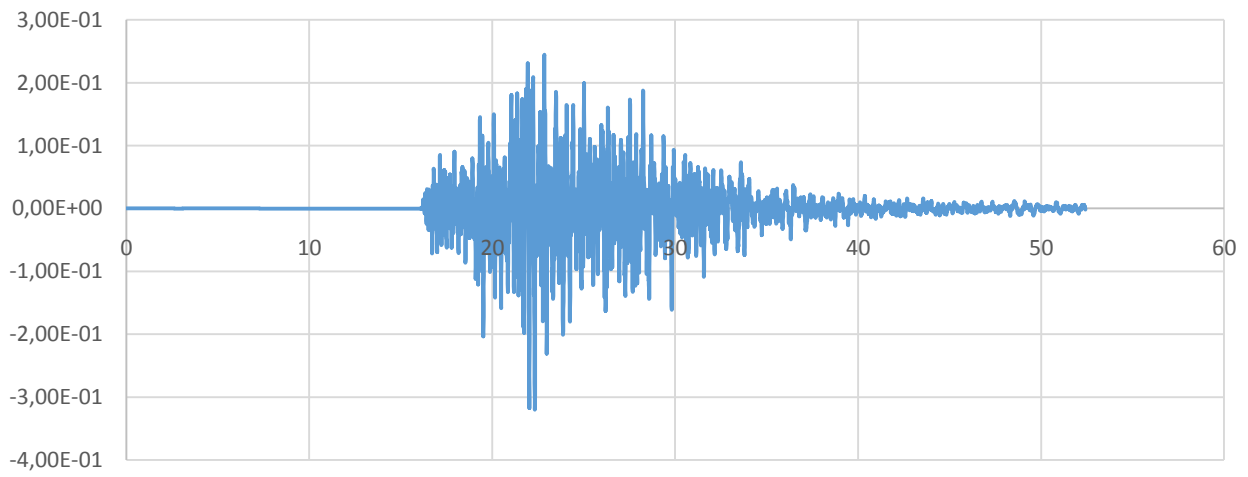
ACCELEROGRAMMA 4 / SCENARIO 25



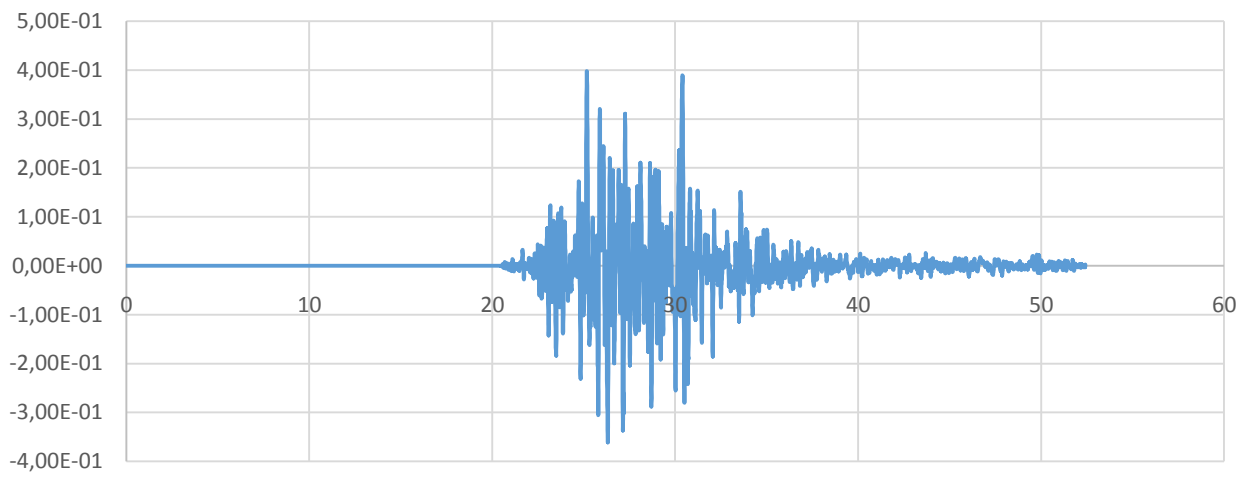
ACCELEROGRAMMA 5 / SCENARIO 264



ACCELEROGRAMMA 6 / SCENARIO 27



ACCELEROGRAMMA 7 / SCENARIO 63



11. MOPS 2013

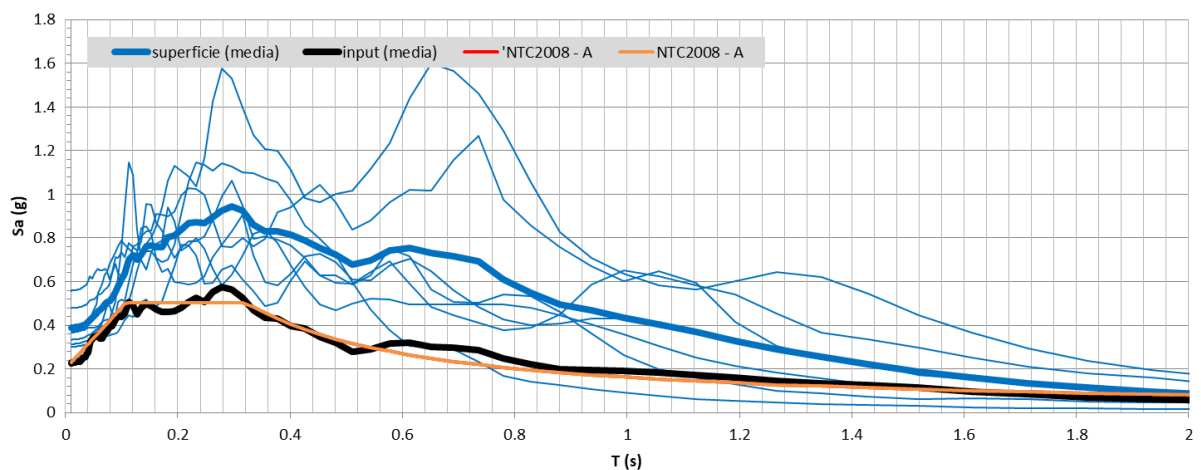
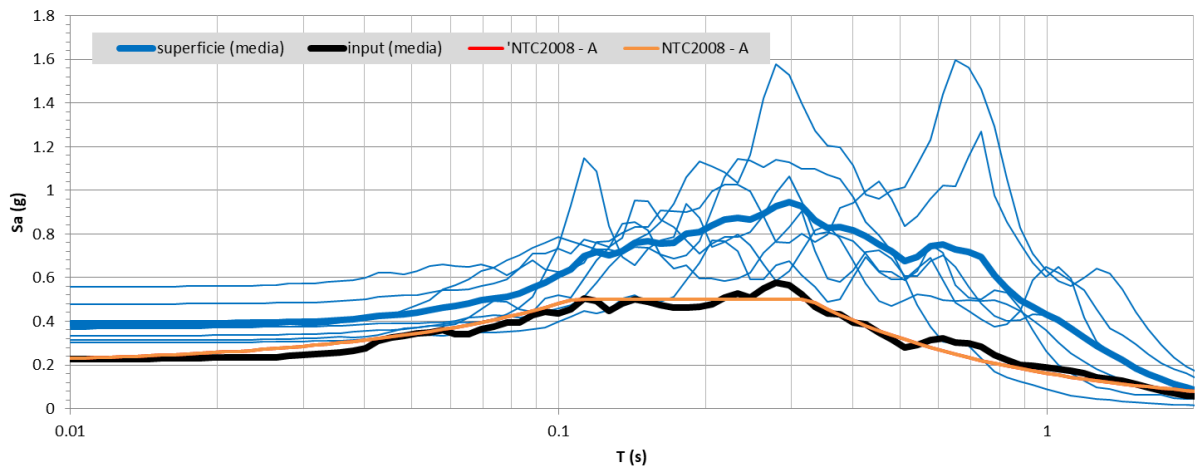
FA 0.1-0.5	FA 0.4-0.8	FA 0.7-1.1
1.83	2.43	2.47
FA 0.1-0.5		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
1.65	1.83	2.03
FA 0.4-0.8		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
2.20	2.43	2.68
FA 0.7-1.1		
$e^{m_{ln}-s_{ln}}$	$e^{m_{ln}}$	$e^{m_{ln}+s_{ln}}$
2.20	2.47	2.78

$$m_{ln} = \frac{1}{7} \sum_{i=1}^7 \ln(FA_i)$$

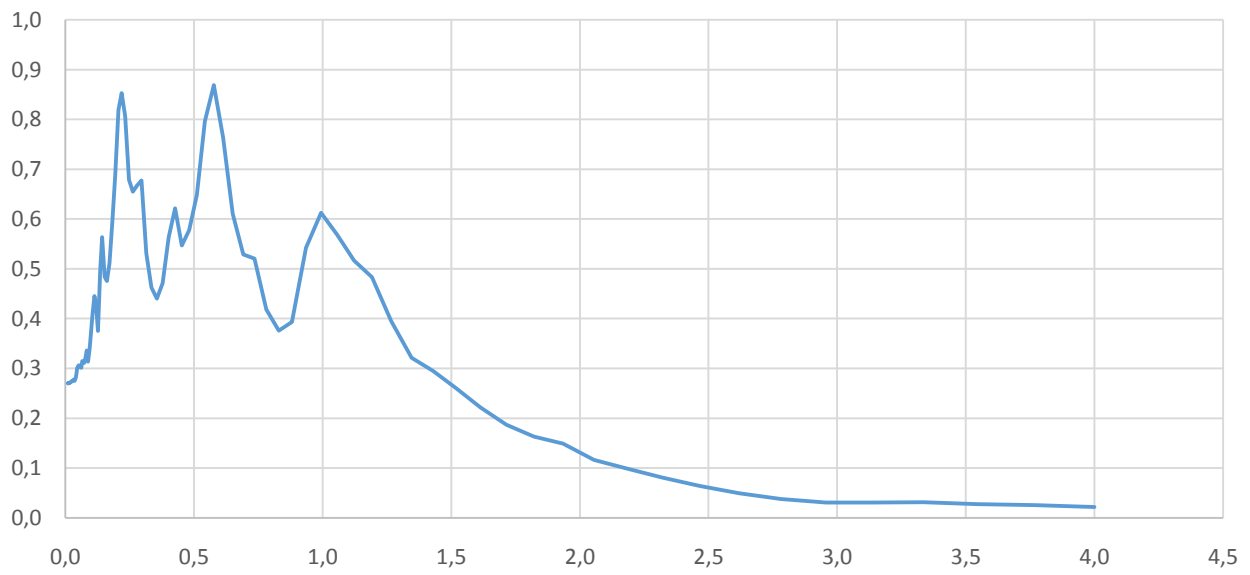
$$FA_{rif} = e^{m_{ln}}$$

$$s_{ln} = \sqrt{\frac{1}{6} \sum_{i=1}^7 [\ln(FA_i) - m_{ln}]^2}$$

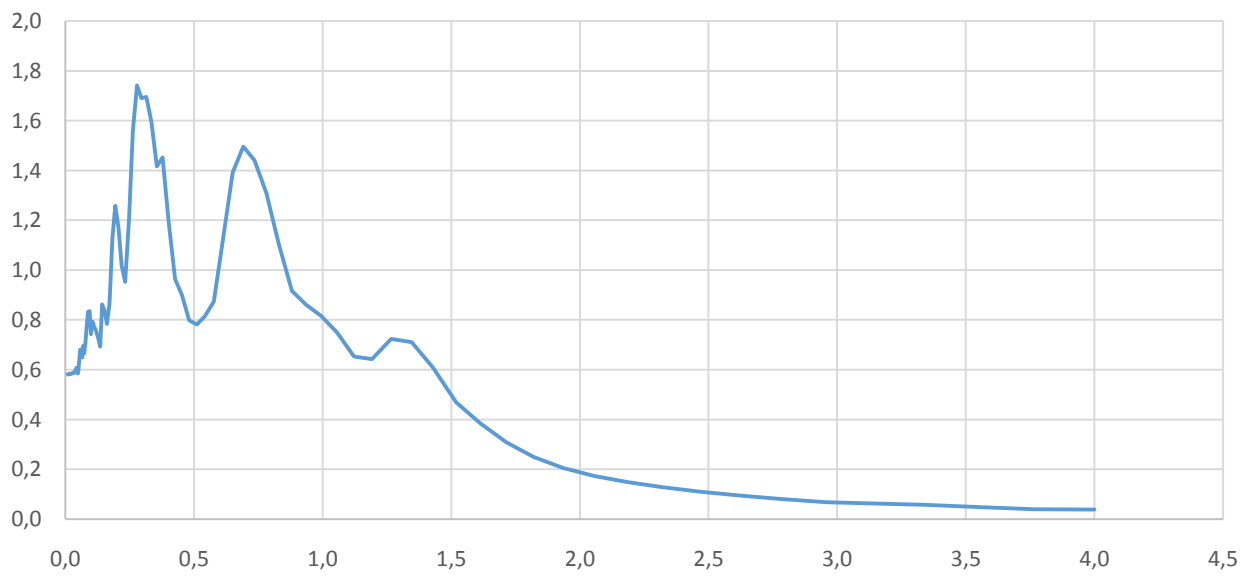
$$e^{m_{ln}-s_{ln}} \quad e^{m_{ln}+s_{ln}}$$



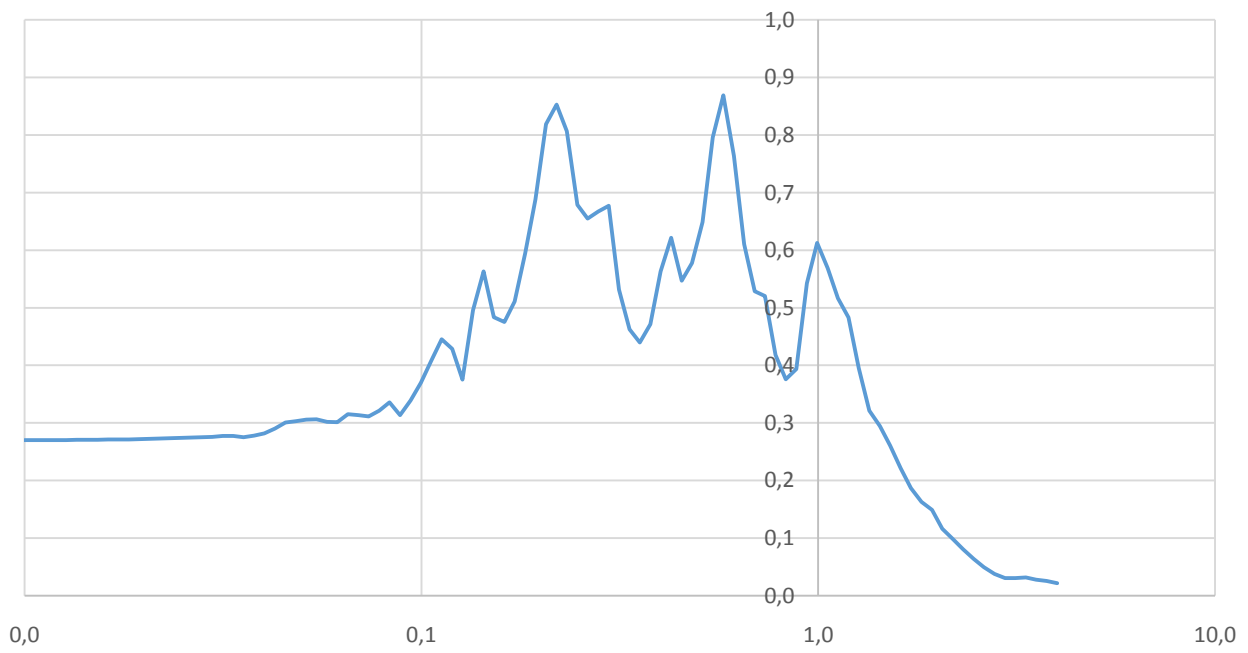
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 652



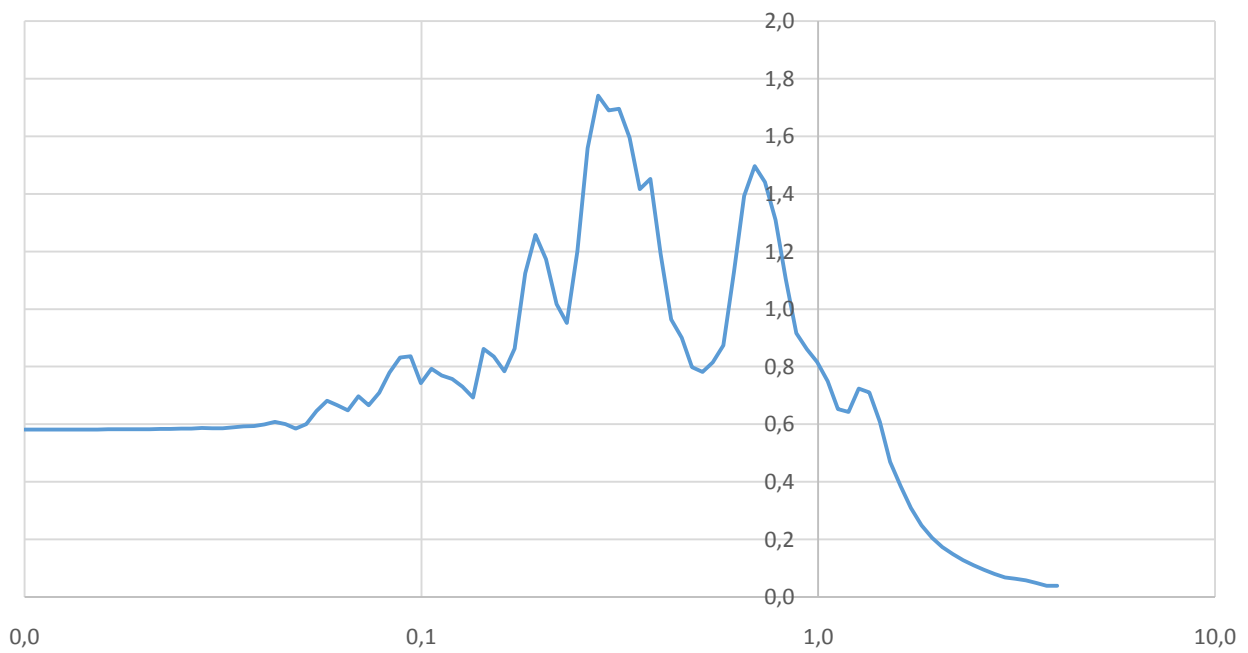
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 282



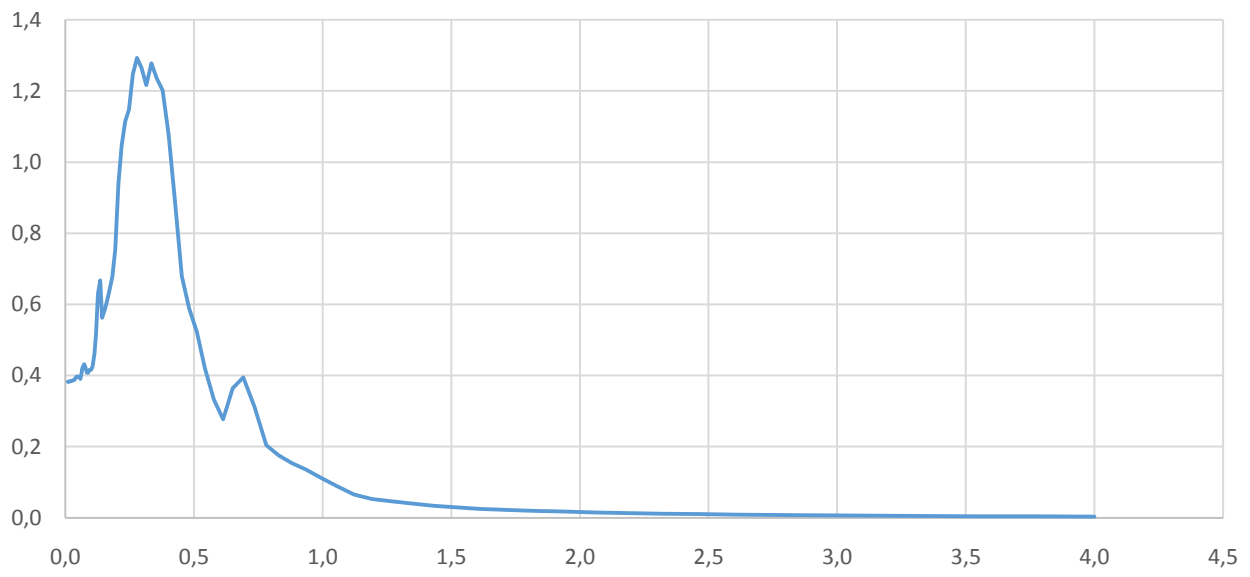
SPETTRO / ACCELEROGRAMMA 1 / SCENARIO 652



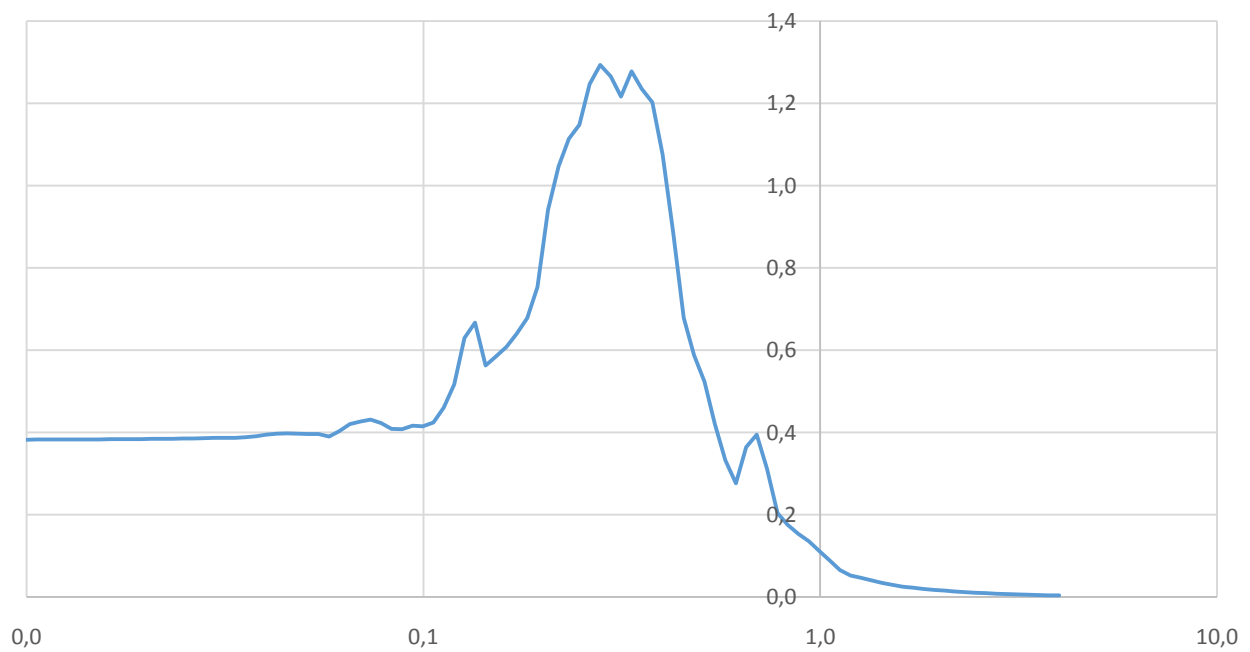
SPETTRO / ACCELEROGRAMMA 2 / SCENARIO 282



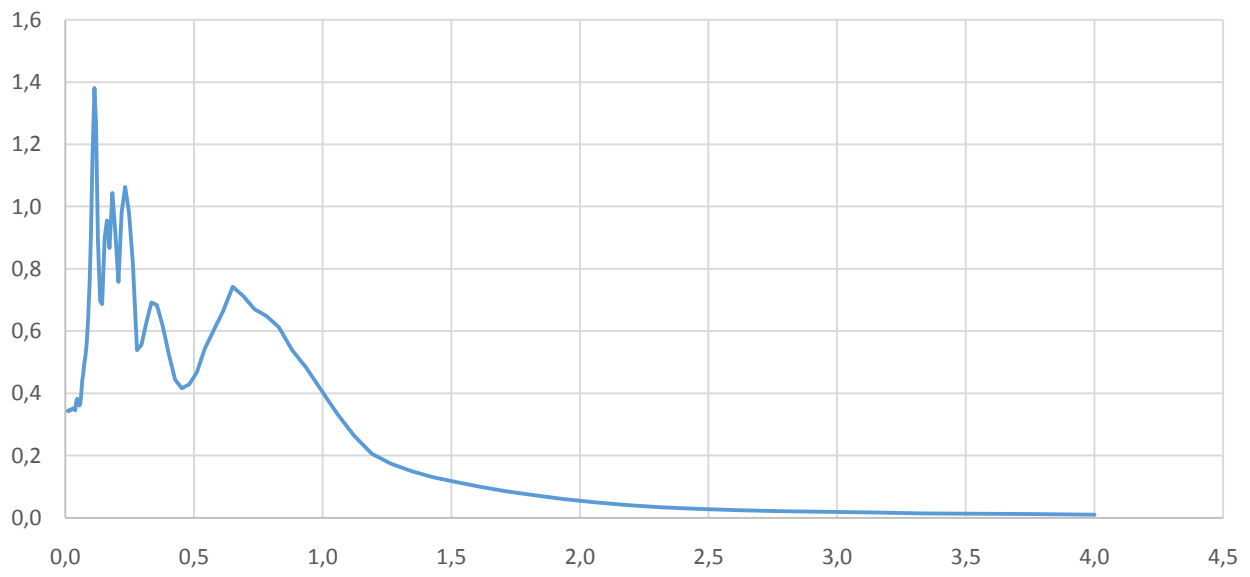
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 185



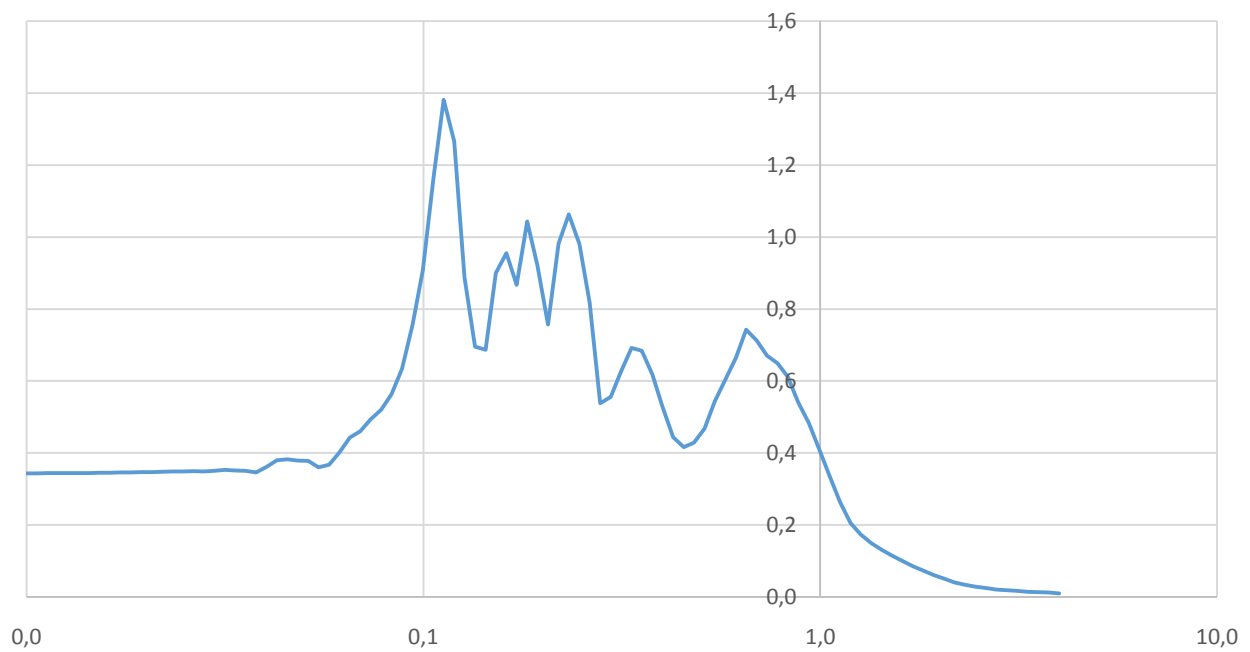
SPETTRO / ACCELEROGRAMMA 3 / SCENARIO 185



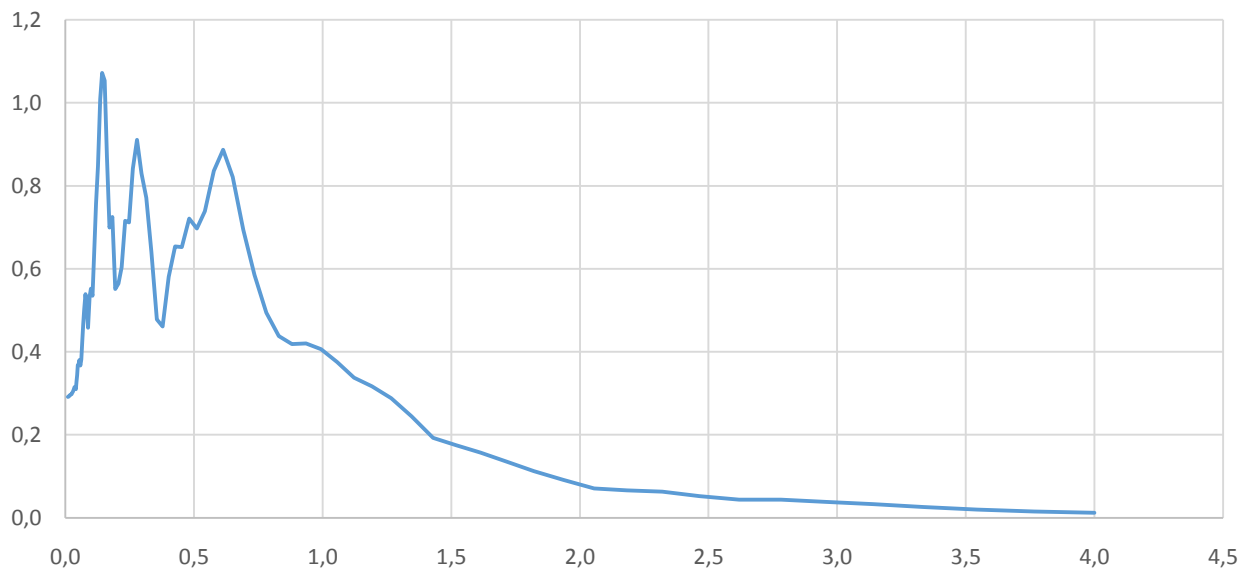
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 543



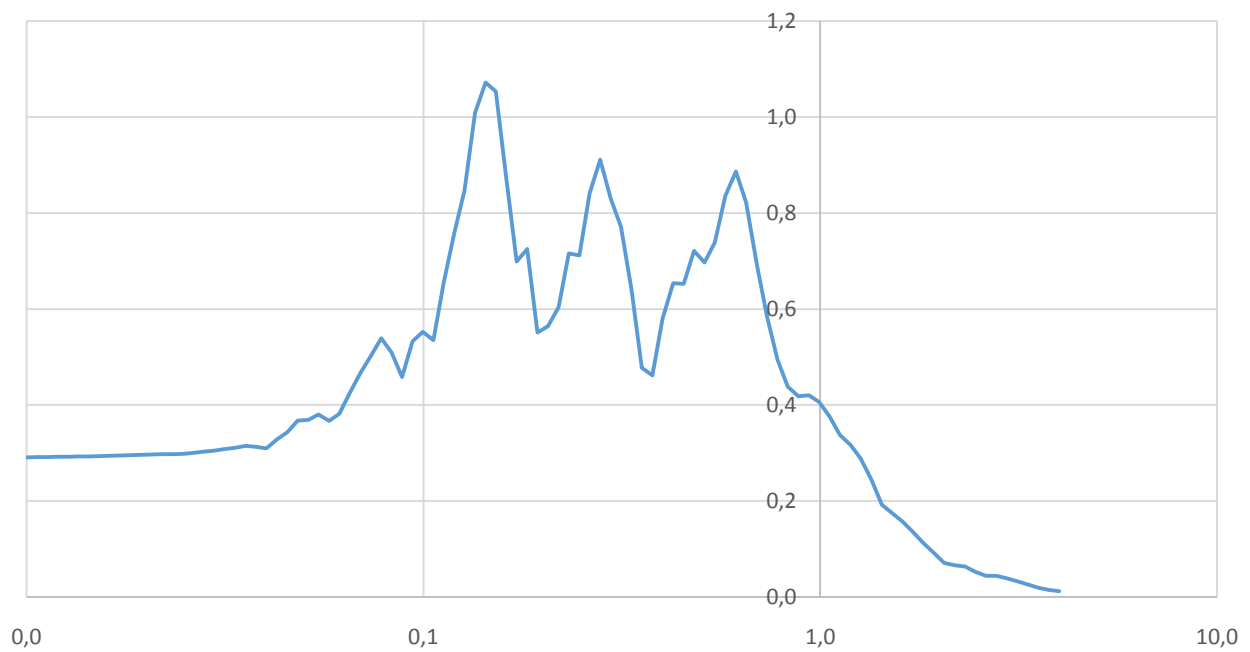
SPETTRO / ACCELEROGRAMMA 4 / SCENARIO 543



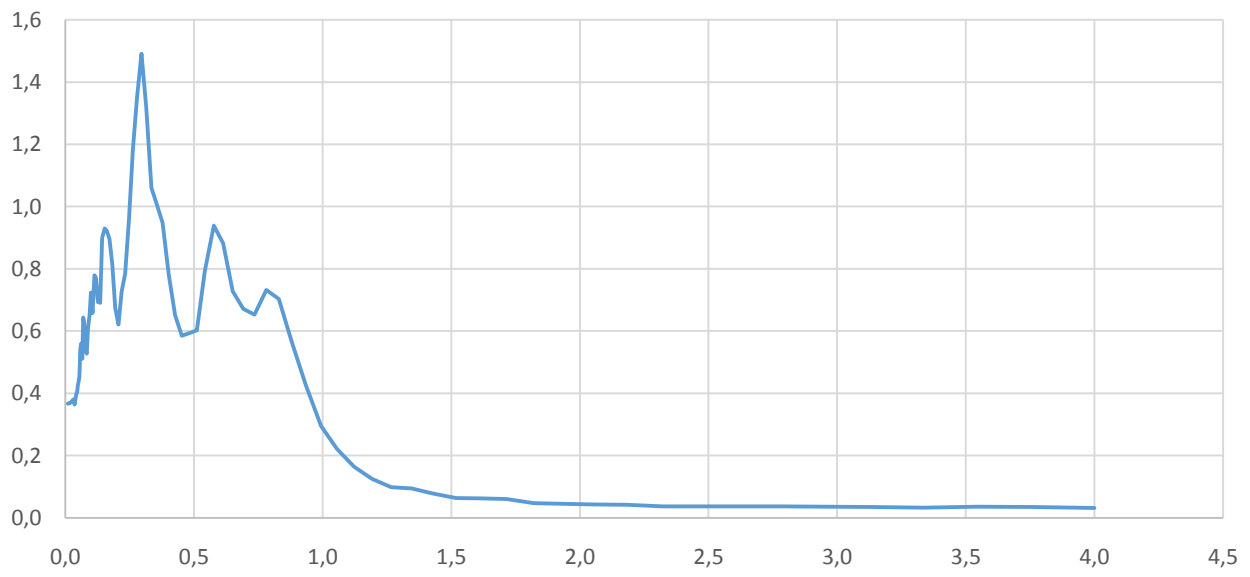
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 565



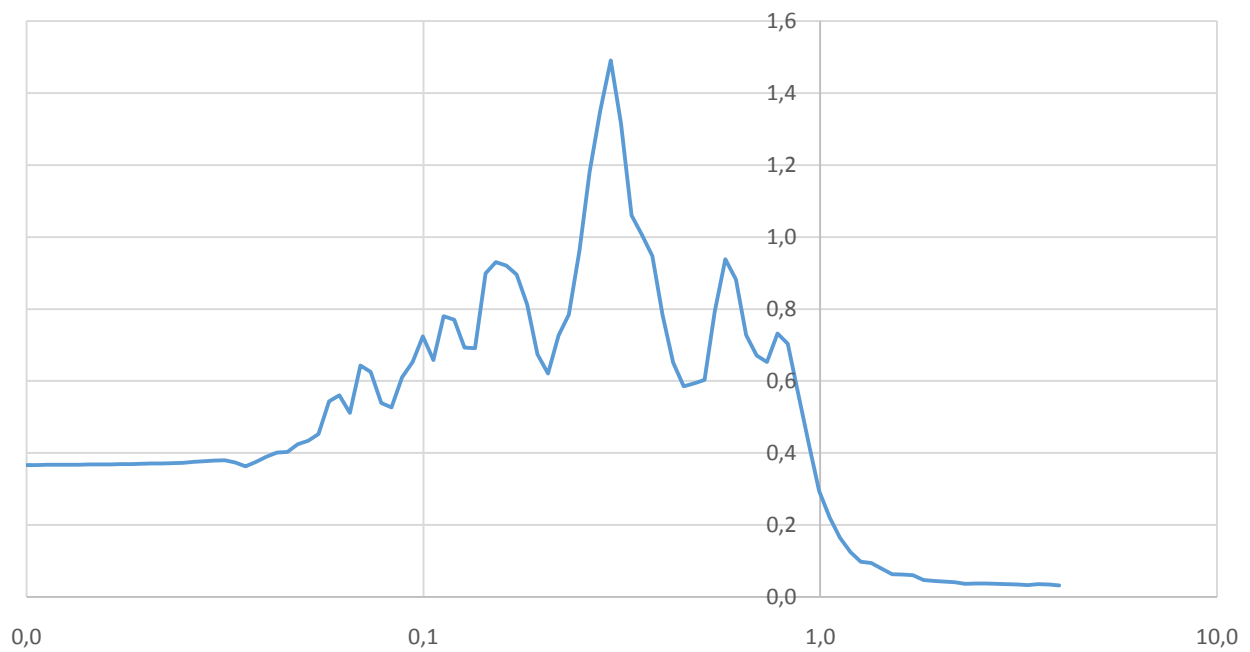
SPETTRO / ACCELEROGRAMMA 5 / SCENARIO 565



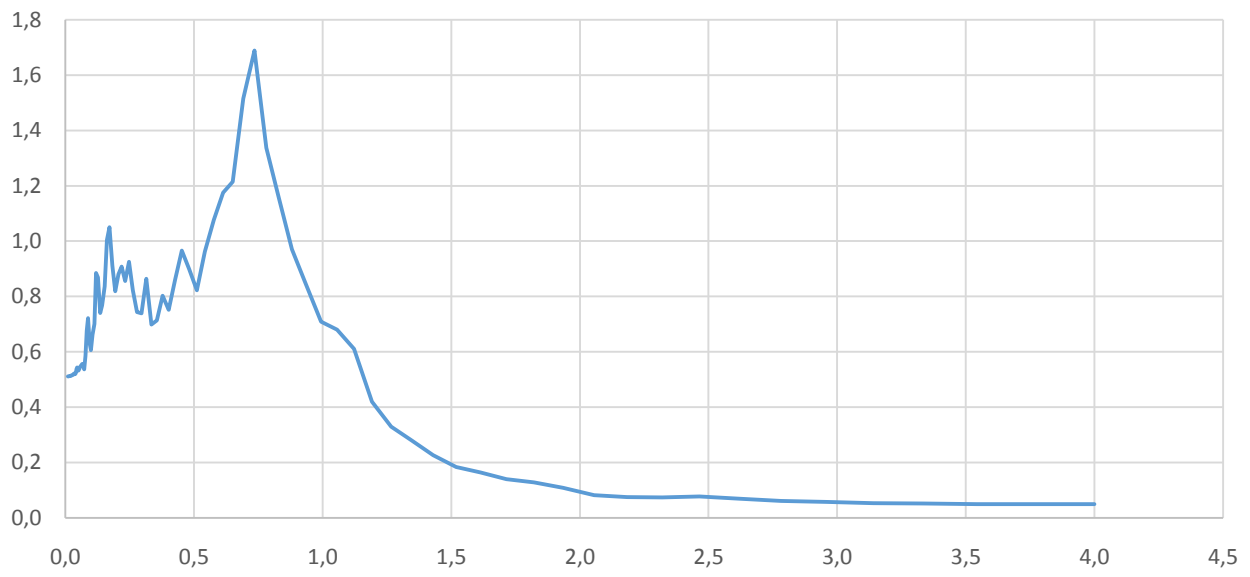
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 517



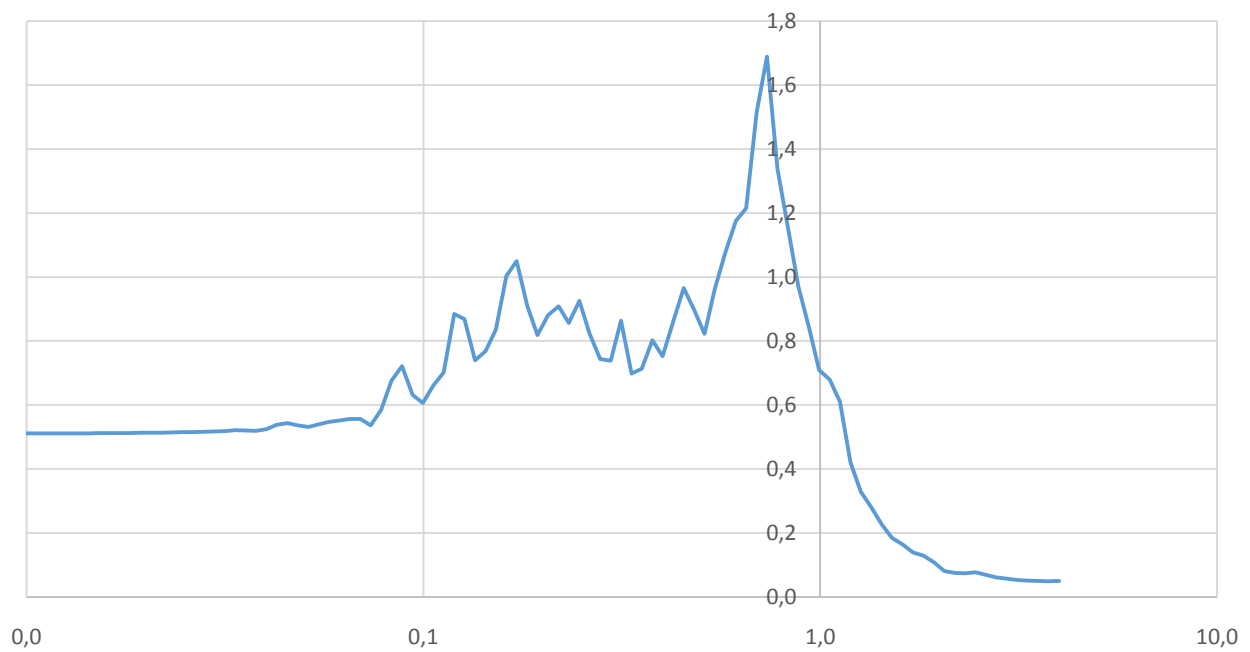
SPETTRO / ACCELEROGRAMMA 6 / SCENARIO 517



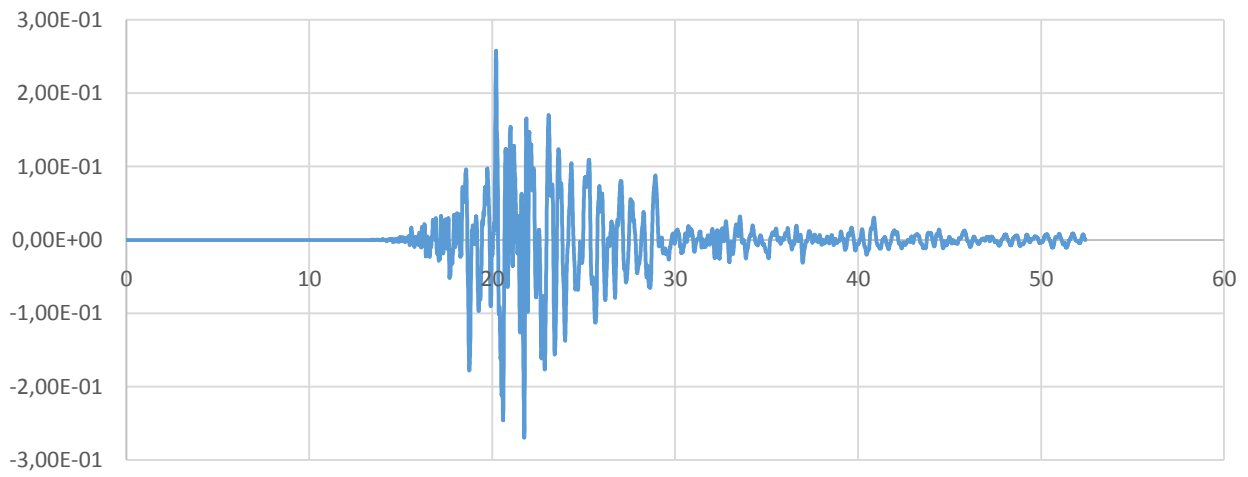
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 567



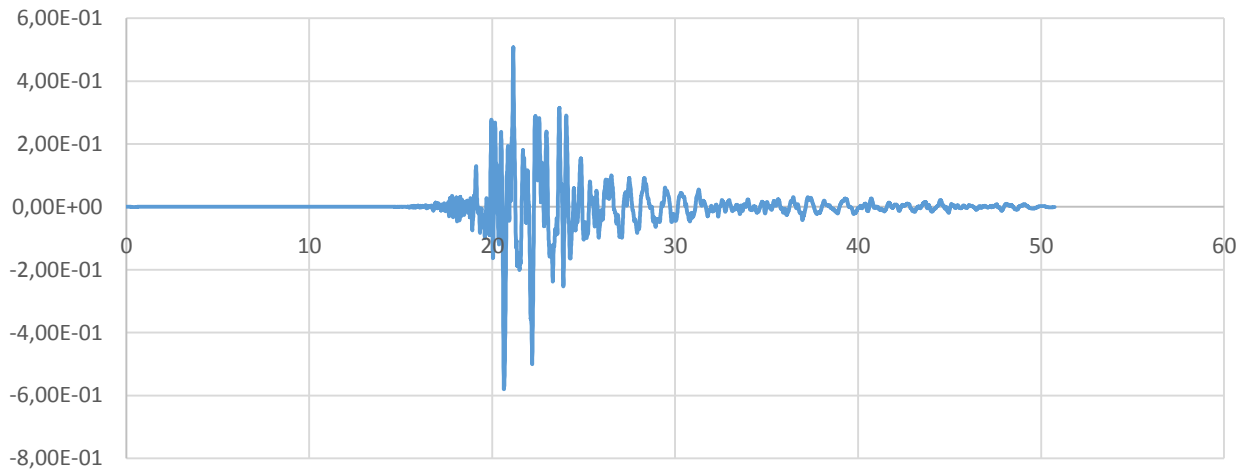
SPETTRO / ACCELEROGRAMMA 7 / SCENARIO 567



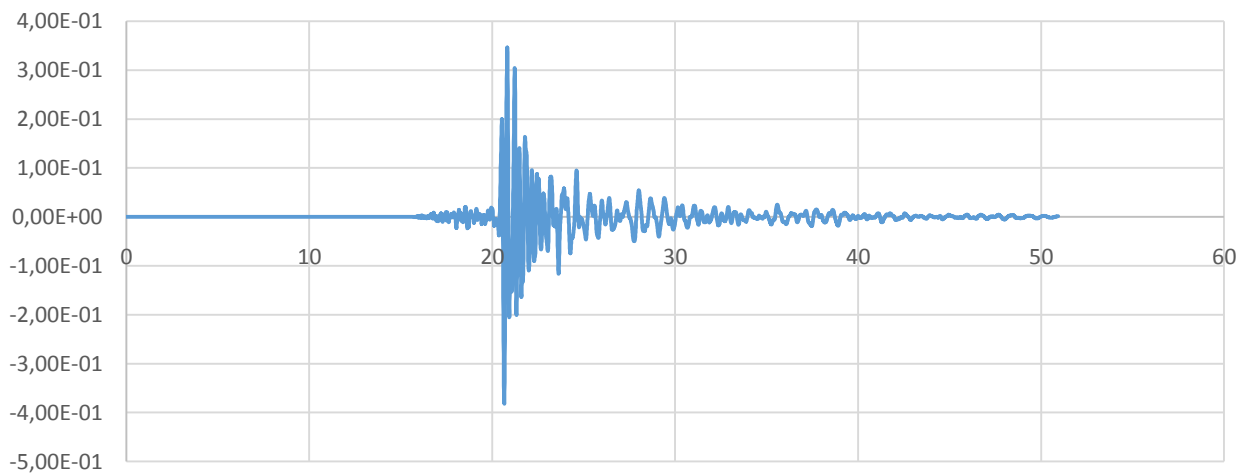
ACCELEROGRAMMA 1 / SCENARIO 652



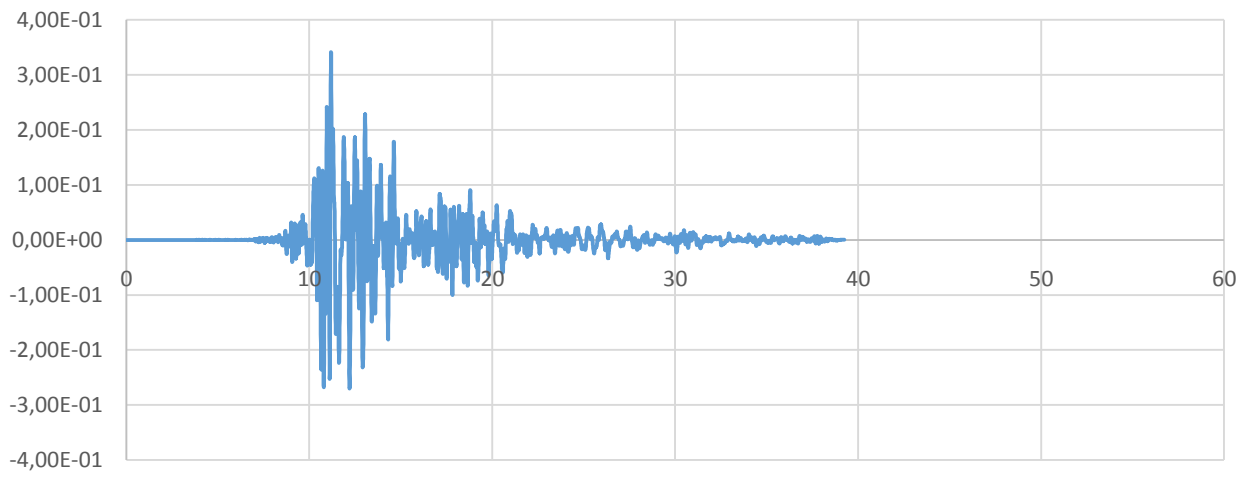
ACCELEROGRAMMA 2 / SCENARIO 282



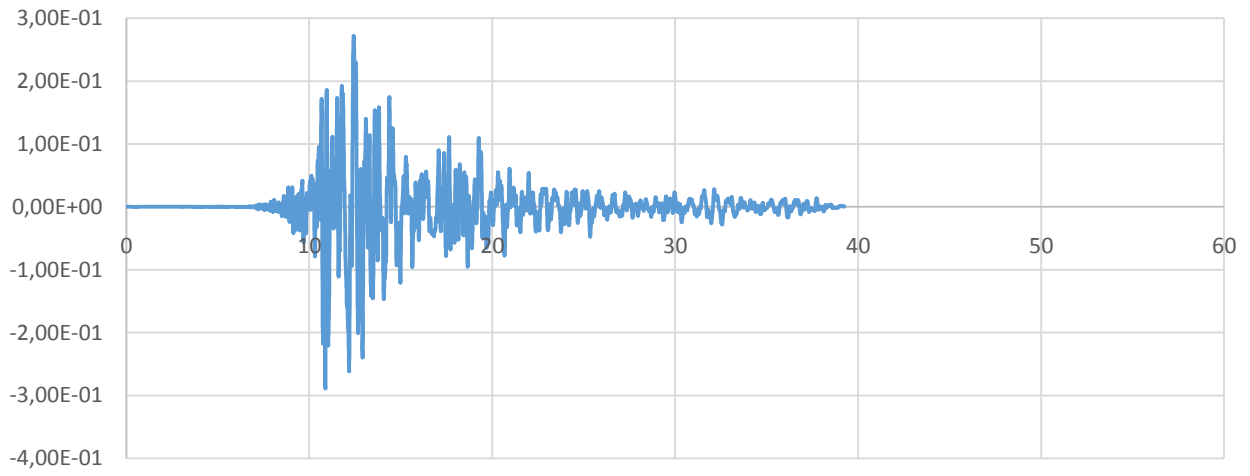
ACCELEROGRAMMA 3 / SCENARIO 185



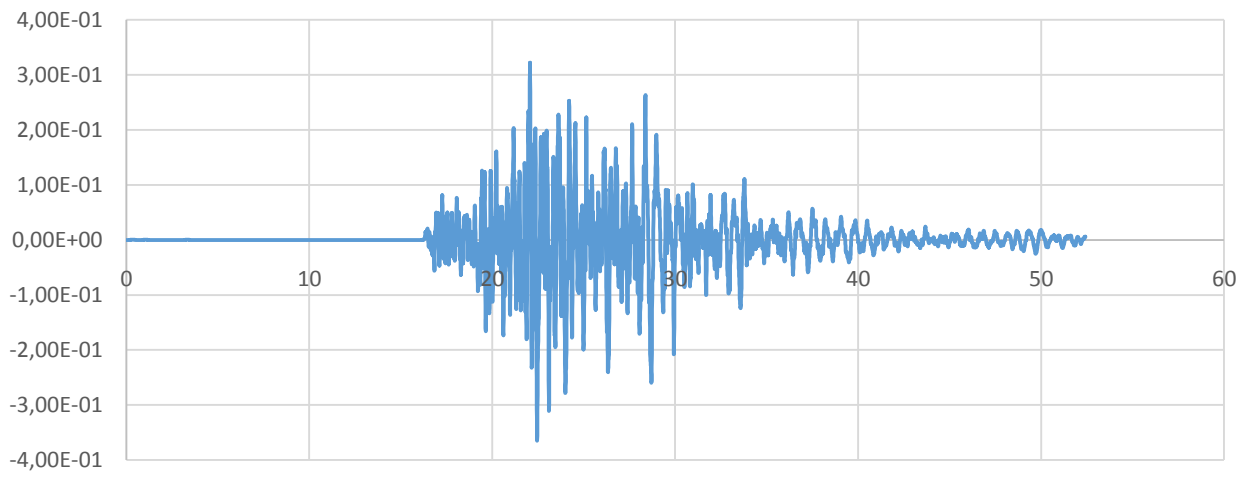
ACCELEROGRAMMA 4 / SCENARIO 543



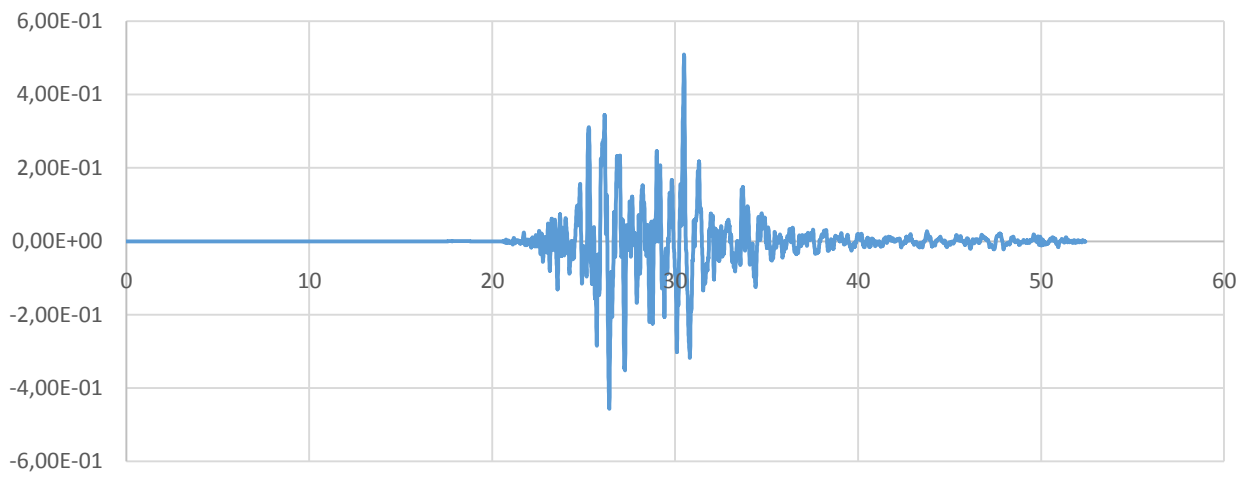
ACCELEROGRAMMA 5 / SCENARIO 565



ACCELEROGRAMMA 6 / SCENARIO 517



ACCELEROGRAMMA 7 / SCENARIO 567



12. RIEPILOGO

MOPS	FA 01-05	FA 04-08	FA 07-1.1
2001	1.28	1.36	1.24
2002	1.06	1.01	1.01
2003	1.53	1.79	1.78
2004	1.33	1.35	1.24
2005	1.49	1.91	2.09
2006	2.17	1.78	1.45
2009	1.67	1.6	1.36
2010	1.27	1.9	1.93
2011	1.06	1.01	1.01
2012	1.65	1.59	1.38
2013	1.83	2.43	2.47