



**PRELIMINARY STUDY OF  
DISPLACEMENTS AND  
ACCELERATIONS AT  
CLOSE SOURCE  
DISTANCES FOR L'AQUILA  
EARTHQUAKE V1.00**



Edoardo Cosenza, Eugenio Chioccarelli and Iunio Iervolino

[cosenza@unina.it](mailto:cosenza@unina.it); [eugenio.chioccarelli@unina.it](mailto:eugenio.chioccarelli@unina.it); [iunio.iervolino@unina.it](mailto:iunio.iervolino@unina.it)

*Dipartimento di Ingegneria Strutturale, Università di Napoli Federico II.*

Mainshock of the recent earthquake with epicenter in Abruzzo (date 6/04/09 1.32AM – UTC; Magnitude 5.8) has been recorded by 57 stations of the Accelerometric National Network (RAN).

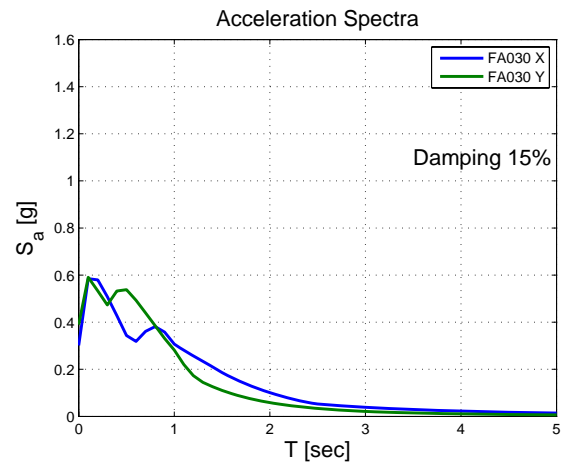
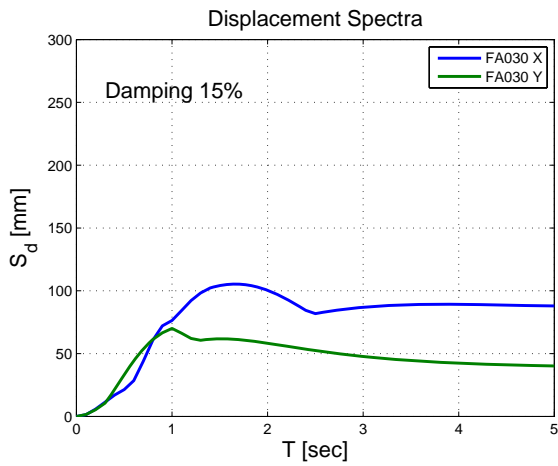
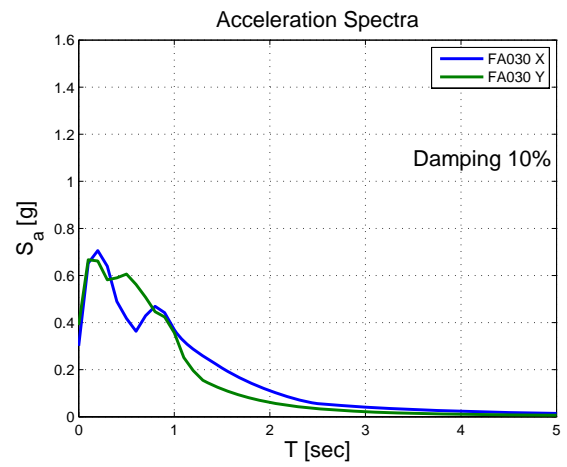
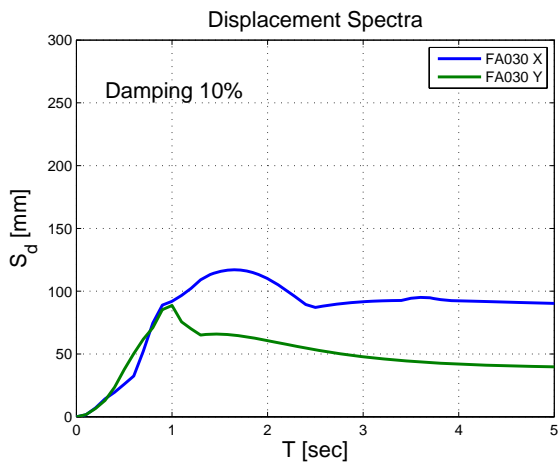
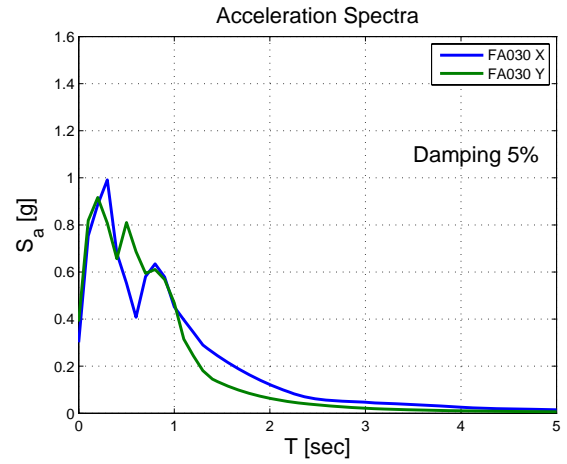
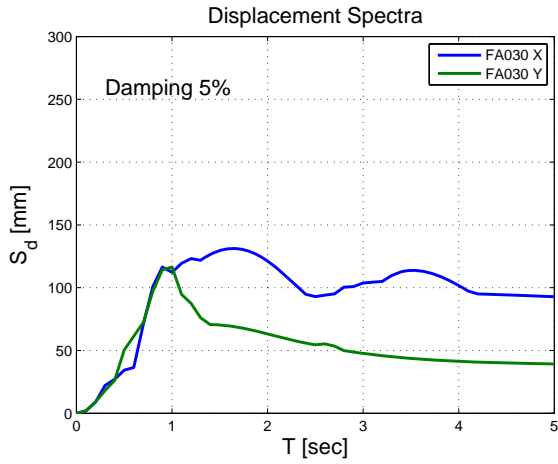
Four of them have an epicentral distance lower than 10 km. Data from these station, like from the other 53, are available on Reluis website (<http://www.reluis.it>); they have the following identification codes: FA030, GX066, AM043, CU104.

After the linear baseline correction and a Butterworth bandpass filter applied on records, elastic spectra were obtained for different equivalent damping values.

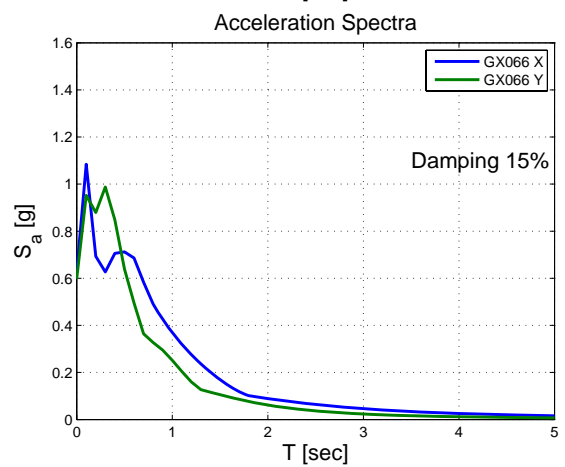
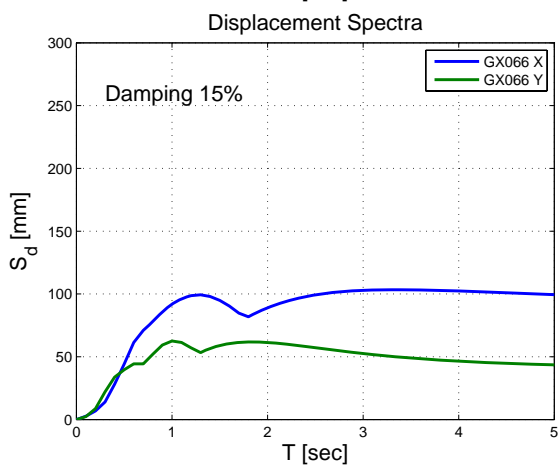
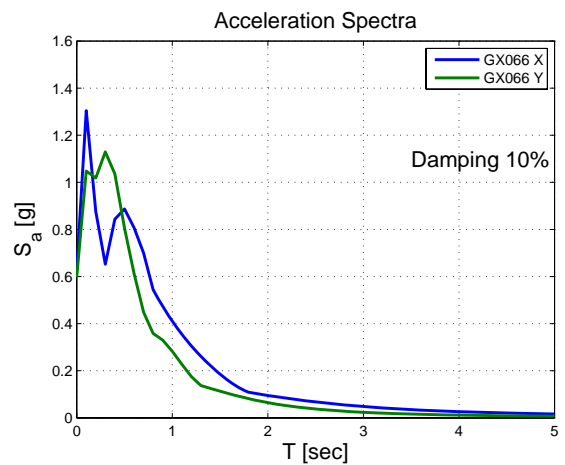
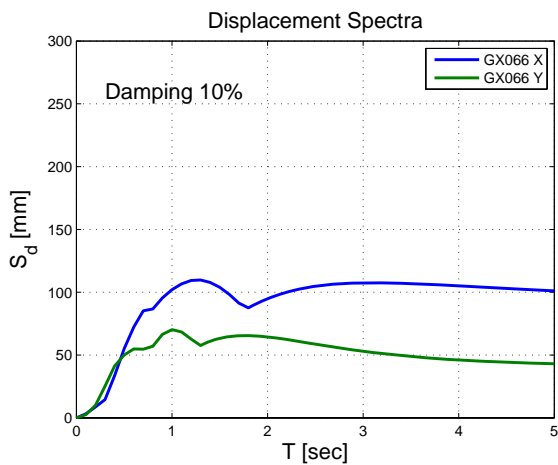
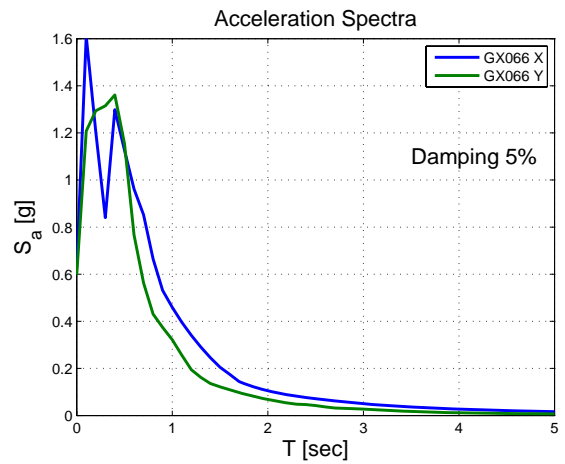
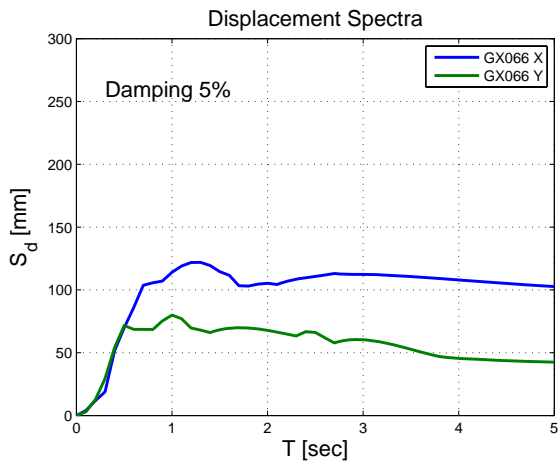
These spectra are reported below. It's interesting to point out that they are characterized from high acceleration in the low period range. So rigid structures are subjected to very high forces.

On the contrary fundamental period of a structure with base isolation system is between 2 and 2.5 seconds where spectral acceleration are much lower. For this period spectral displacements are never bigger than 25 cm: this displacement value can be easily absorbed by ordinary seismic isolators but a seismic isolation system can also improve equivalent damping of the structural system. So maximum displacement of an isolated structure would be less than this value.

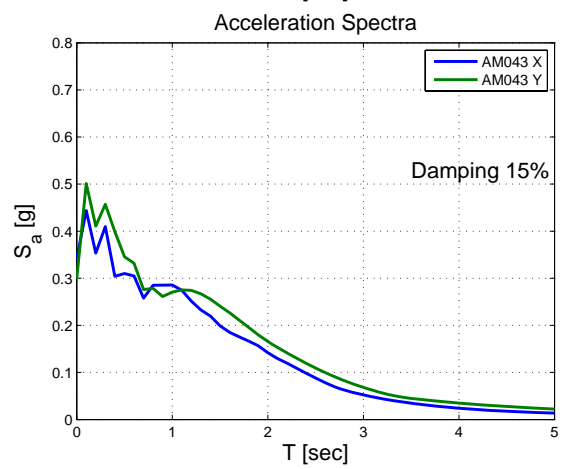
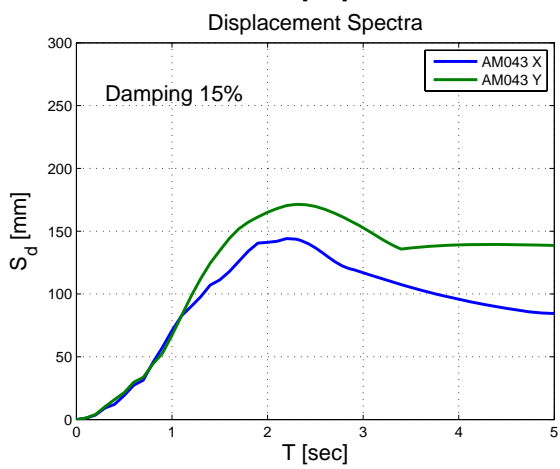
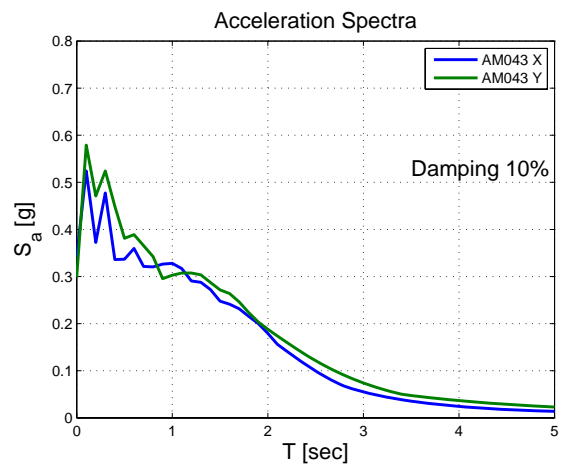
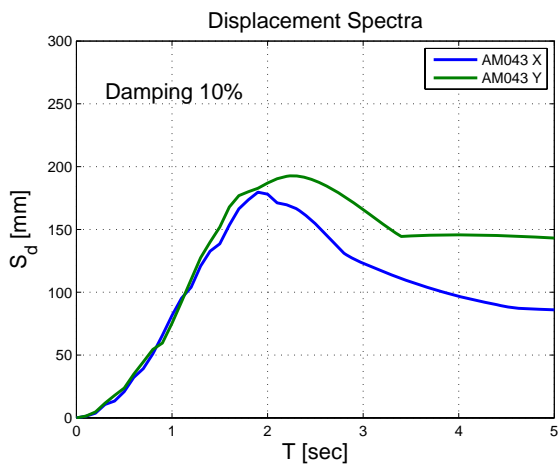
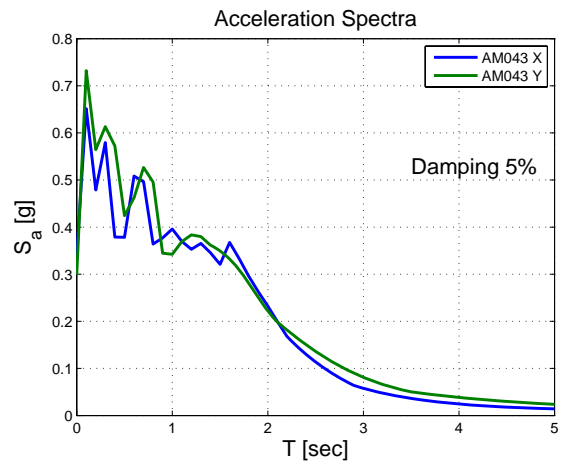
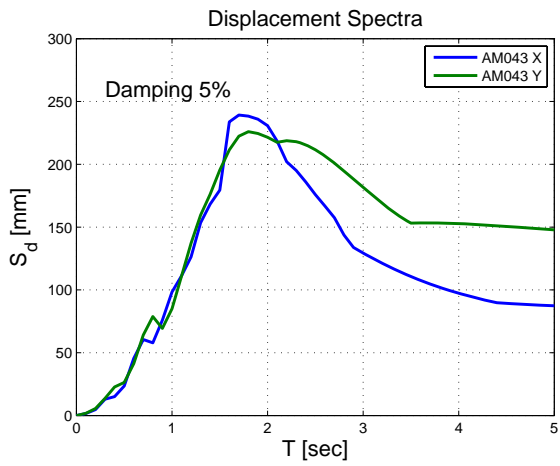
## Record FA030 – Epicentral Distance 4.30 km



## Record GX066 – Epicentral Distance 4.80 km



**Record AM043 – Epicentral Distance 5.60 km**



# Record CU104 – Epicentral Distance 5.80 km

