

## ACCELEROGRAMS ANALYSIS FOR THE CREATION OF A DISTRIBUTED EUROPEAN DATABASE (NERIES PROJECT)

**AUTHOR:** Daniel Auledas Miralpeix

**INTERNAL TUTOR:** Lluís Gonzaga Pujades Benet

**EXTERNAL TUTOR:** Teresa Susagna Vidal

Since the 20th century accelerograms have allowed the study of seismic phenomena the engineering earthquake research. In this aspect the parameters obtained are important for engineers to reduce earthquake risk at builded areas and to contribute supplying primary systems good design in future earthquake effects.

The research developed on this “*Tesina*” has consisted of a first treatment of the accelerometric data from the institutions participating in the Neries project, specifically the “Institut Geològic de Catalunya” data treatment. The European Network of Research Infrastructure for European Seismology (Neries project) combines networks, access through European countries and to coordinate mutual researches in order to promote improved access among the databases, mutual protocols, standardized processes and finally strategies for long term seismologic data distribution and archiving.

This “*Tesina*” first stage concerns to the accelerometric data from the “Institut Geològic de Catalunya” compilation and the study of all recording tools used for the Institute’s collection data.

Secondly usual accelerometric treatment data and their use for the seismological engineering studies has been analyzed.

In addition, Neries project tasks and phases have been studied and data from all institutes which participated in the project has been obtained. The accelerometric data from the different institutes participating in the project have been processed previously for their standardization using a program that will be implemented in Neries in the near future.

Afterwards, several Matlab software have been created for the database parameters treatment. This treatment has been useful for: to draw statistical histogram graphics where parameters’ trends can be analyzed; to draw response spectra graphics where trends in acceleration, velocity and displacement can be studied per each institute; to adjust parameter relationships where lineal relations between logarithmic parameters form have been looked for and formulas have been adjusted in order to obtain parameters from other parameters.

In conclusion, the analysis of the results from the parameters useful seismic engineering lead to discover several trends according to the database origin area; different parameters have been linked successfully and finally leads to modify the accelerometric data standardization software on project Neries. In consequence this “*Tesina*” is one step forward for the creation of an European distributed database where institutes and universities which study seismology will be able to access the accelerometric database. Once Neries is permanently running in 2010, Europe will have a great seismic agency as the same level as other leading countries already have.