

## DECLARATION

Name: BOROMELO Luana  
Email: luanaboromeo@gmail.com

Title of the Msc Dissertation: Dynamic monitoring analysis of Mallorca cathedral.

Supervisor(s): Pere Roca, Oriol Caselles

Year: 2010

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

I hereby declare that the MSc Consortium responsible for the Advanced Masters in Structural Analysis of Monuments and Historical Constructions is allowed to store and make available electronically the present MSc Dissertation.

University: UPC

Date: July 13<sup>th</sup> , 2010

Signature: \_\_\_\_\_



...to Leda



## **ACKNOWLEDGEMENTS**

I am grateful to my supervisors Pere Roca and Oriol Caselles for the technical guidance and constant encouragement during the period of the thesis.

I would like to express my gratitude to the MSc Consortium to give me the opportunity to participate in the Masters course.

I want to thank my family and all my friends for supporting me in every moment in spite of being far away from me. I am specially thankful to my Master's colleagues, for their help in study and in madness.



## **ABSTRACT**

Mallorca cathedral represent one of the most audacious example of Gothic architecture developed in Spain.

As part of a larger project funded by the Spanish Ministry of Culture and of a EU-India cooperation project an important analysis of the cathedral is being carried out aiming to the control of the structural behavior of the building.

The installation of a static and dynamic monitoring system on the structure was part of this project.

This thesis work examines the great amount of data registered by the dynamic monitoring equipment. Defining the dynamic characteristics of the building and their variation caused by external factors, such as environmental and loading effects, aiming to make a complete diagnosis of the building and to define dangerous situations that can occur in the future.





## RESUMO

La catedral de Mallorca representa uno de los ejemplos más audaz de la arquitectura gótica que se desarrollo en España.

Como parte de un proyecto propuesto por el Ministro de la Cultura de España y de un proyecto de cooperación entre Unión Europea y India se está desarrollando un análisis detallada de la catedral, para el control del comportamiento estructural del edificio.

Parte de este proyecto fue la instalación de un sistema de monitoreo estático y dinámico de la estructura.

Este trabajo de tesis quiere analizar la gran cantidad de datos registrada por el sistema de monitoreo dinámico. Definiendo las características dinámicas del edificio y su variación debida a agentes externos, ambientales y de carga, para poder trazar una diagnosis completa del edificio y poder definir situaciones de peligro que podrían ocurrir en futuro.



## **SINTESI**

La cattedrale di Mallorca rappresenta uno degli esempi più audaci dell'architettura gotica sviluppatasi in Spagna.

Come parte di un progetto proposto dal Ministro della Cultura di Spagna e di un progetto di cooperazione tra Unione Europea e India si sta sviluppando una approfondita analisi della cattedrale, indirizzata al controllo del comportamento strutturale dell'edificio.

Parte di questo progetto fu l'installazione di un sistema di monitoraggio statico e dinamico della struttura.

Questo lavoro di tesi tratta di analizzare la grande quantità di dati registrata dal sistema di monitoraggio dinamico. Definendo le caratteristiche dinamiche dell'edificio e la loro variazione causata da agenti esterni, ambientali e di carico, per poter poi tracciare una diagnosi completa dell'edificio e poter definire situazioni di pericolo future.

