

MASTER'S DISSERTATION AT STRUCTURAL MECHANICS

DEPARTMENT OF CONSTRUCTION SCIENCES | FACULTY OF ENGINEERING | LUND UNIVERSITY



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PRESENTATION

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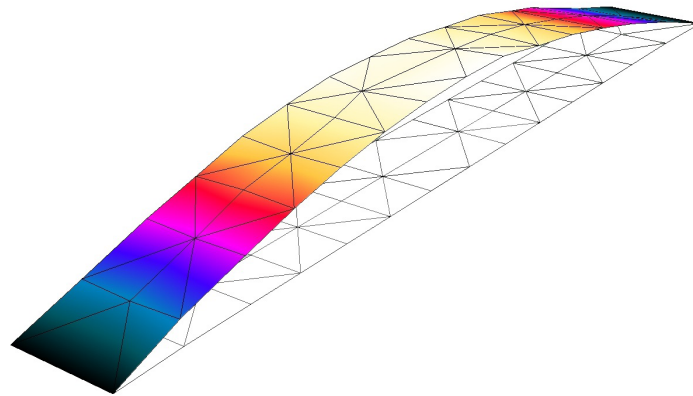
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**THE WORK IS PERFORMED AT
STRUCTURAL MECHANICS, LTH**

**IN COOPERATION WITH
SCANSCOT TECHNOLOGY**

MODAL TESTING AND STRUCTURAL IDENTIFICATION



BACKGROUND

Bridges have been built around the world for at least 3000 years and have made it possible for man to travel over obstacles like valleys and rivers, which has contributed to the rapidly growing infrastructure we have today. Efforts made to save materials and reduce production costs have led to lighter and slender structures, which in turn can cause dynamic problems where the bridge is sensitive to vibrations. Vibrations from traffic, wind, wave and seismic loads may cause major problems for a lightweight design as the risk of fatigue of structural elements is very large. Therefore, it is important to always study the dynamic parameters: natural frequencies, mode shapes and damping ratios using both measurement techniques and computer models.

AIM AND METHOD

The aim of this thesis is to study and compare different types of measurement methods used to identify structures dynamic parameters and compare them with numerical calculations. To facilitate the comparisons between the methods and avoid environmental interference, measurements will be carried out in a lab on a well-defined steel structure.

ABAQUS will be used to create a finite element model of the structure and the measurements will be carried out using hardware/software from Brüel & Kjær.



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