CARL LÖFQUIST

ANALYSIS METHOD FOR STRUCTURES DUE TO EXPLOSION LOAD

PRESENTATION
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REPORT
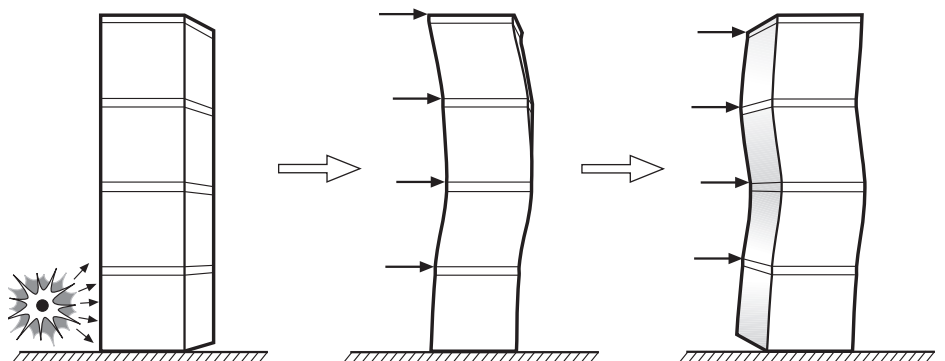Will be published as
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DESCRIPTION

At the Div. of Structural Mechanics, earlier studies on the deformation due to impact and explosion loads have been performed. The use of Ritz vectors, which represents physical deformations at a given load case, was proven successful when analyzing glass panes subjected to impact loads. The present study will examine the use of this method for analyzing building structures affected by explosion loads. If successful, it will provide a fast and accurate method for use in the design of new buildings.

The purpose of this master thesis is to develop dynamic models that combines sufficient accuracy with computational efficiency. The method will be based on using one or more static deflection modes for the structure that still fulfills the kinematic boundary conditions.

The planned approach and methodology is to first perform a literature study regarding the methods that are used in the Swedish construction industry when designing for explosion loads. The second stage will be to develop Finite element models of a reference building structures with full dynamic analysis which then is reduced using Ritz vectors based on one or more static deflection cases.