Ain-Shams University
Faculty of Engineering

NONLINEAR ANALYSIS OF STEEL FRAMES

BY

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A THESIS SUBMITTED IN

The Partial Fulfillment of the Requirements for

the Degree of Master of Science in

Civil Engineering (Structural Engineering)

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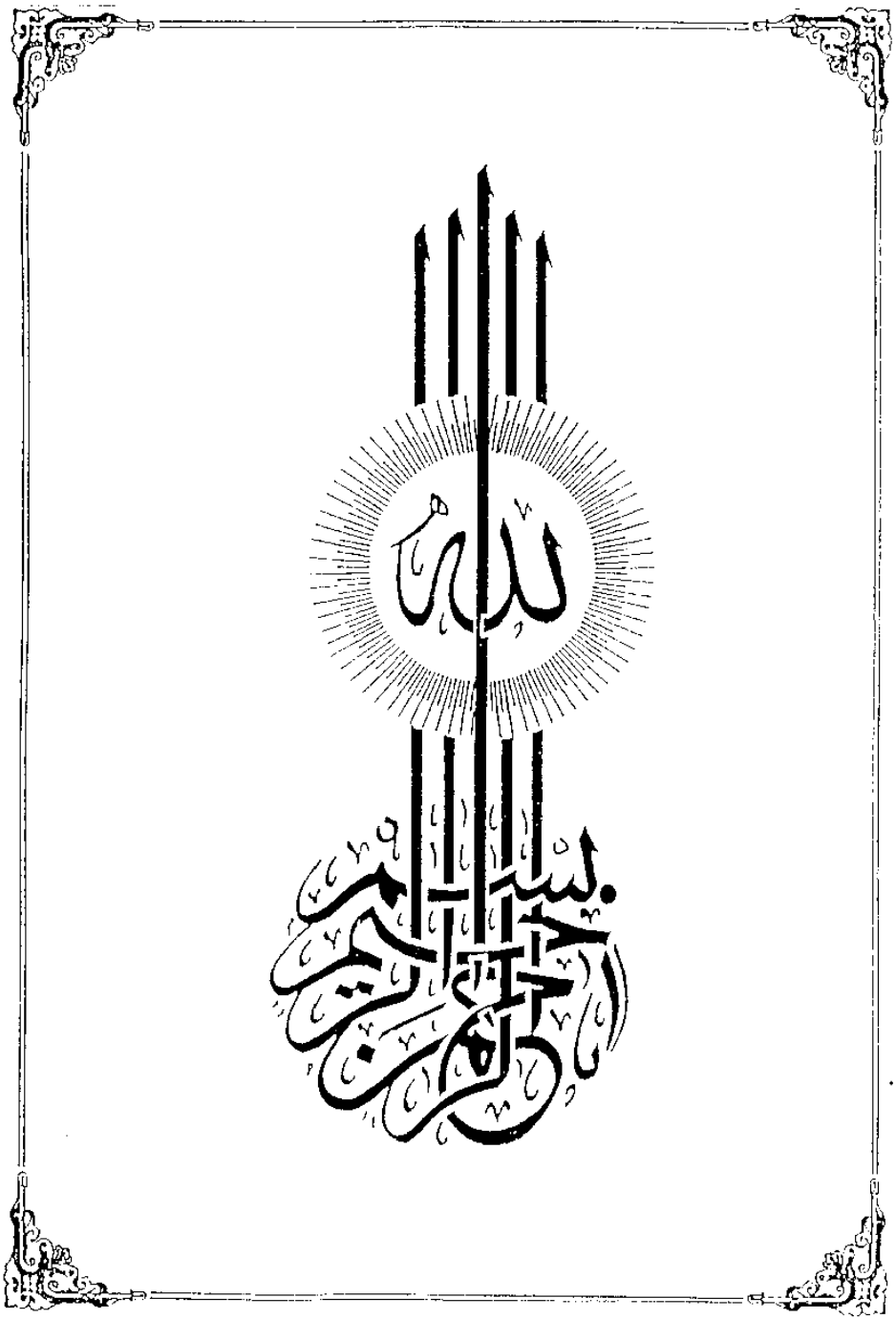
To The Soul
of
My Father



STATEMENT

This Thesis is submitted to Ain Shams University for the degree of Master of science in Structural Engineering.

The work included in this thesis was carried out by the author in the department of structural Engineering, Ain Shams University, from November 1989 till October 1993.

No part of this thesis has been submitted for a degree or a qualification

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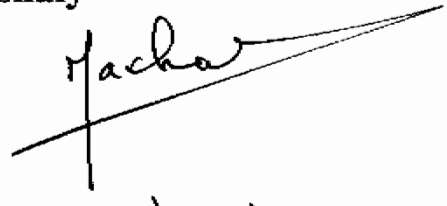

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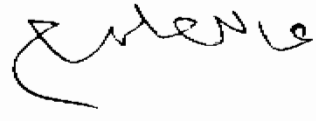

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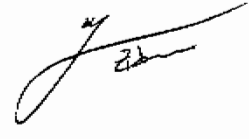

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AIN SHAMS UNIVERSITY
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Abstract of the M. Sc. Thesis Submitted by:

Eng. Aly Atwa Aly

Title of Thesis : Nonlinear analysis of steel frames.

Supervisors: *Prof. Dr. Mostafa Kamel Metwally Zidan*
Dr. Abdel Salam Ahmed Moukhtar

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ABSTRACT

This thesis deals with the nonlinear analysis of steel frames. The previous work in this field was reviewed. A mathematical model that describes the nonlinear behaviour of such structures was suggested. Also, the mathematical formulii necessary for the solution were presented. The nonlinear effects taken into account are : plasticity; instability ; effect of material nonlinearity; effect of axial forces on the plastic bending moments, and effect of change of geometry. A computer program for the analysis was prepared and the results were verified by comparing them with previously published results. Based on the study performed, conclusions and suggestions for future studies were given.

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