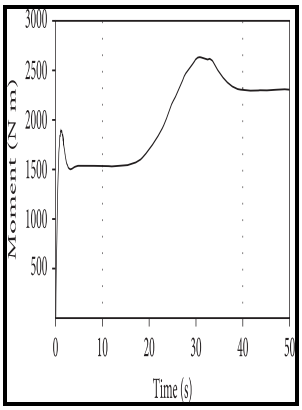
# Comparison of experimental and calculated lift and hinge moment parameters for full-span control surfaces

## National Research Council of Canada - Elevator Hinge Moment




Description: -
-Comparison of experimental and calculated lift and hinge moment parameters for full-span control surfaces
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National Research Council of Canada. Report -- no. MA-206Comparison of experimental and calculated lift and hinge moment parameters for full-span control surfaces
Notes: References: p. 5.
This edition was published in 1948



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**Experimental analysis of aircraft directional control effectiveness**

WB Garner, Model Airplane Propellers.

**Elevator Hinge Moment**

The simplest reliable physics-based computational tools are generally panel codes with coupled empirical boundary layer models. Despite all these limitations, the predictive procedure presented here is already a useful tool for the design of efficient control surfaces.

**Control Hinge Moments**

The pressure load obtained by integrating the local pressures on the undersurface of the flap, F sub p was approximately three times greater at the 60 deg flap position than at the 35 deg flap position. Please use the print version of this publication as About this PDF file: This new digital representation of the original work has been recomposed from XML files created from the original paper book, not from the original typesetting files.

**Stability and Control of Airplanes and Helicopters**

S College of Engineering, Team-310 P a g e 10 29 Next, we performed a mass indexing program to have an estimate whether actually the proposed aircraft weight matches the calculated weight. Fluent does, however, allow investigations of aspects such as lift generated by the fuselage; a well-designed fuselage can augment lift by 5% or more, and Fluent studies can reveal these benefits.

**Preliminary Aerodynamic and Stability Analysis**

The fuselage is a rectangular structure, built using 4 carbon fibre rods and three mounting plates. The frequency matching process must be undertaken for each mode at a particular flight condition.

**CONTROL**

Whether or not it is worth the expense and effort of building an accurate simulator model will depend on the project in hand; for most conventional designs, provided the XFLR5 stability analysis is acceptable and reasonable size control surfaces are planned, it is probably not necessary. The aerodynamic moment on the elevator hinge axis depends on the local angle of attack, the deflection angle of the elevator itself and the airspeed. Martinelli, âMesh Refinement and Modeling Errors in Fluid Simulationâ, AIAA Journal vol.

**Preliminary Aerodynamic and Stability Analysis**

Lift and drag magnitudes were then used for the propulsion analysis. As a result of the study, a credible set of HL-10 lateral-directional derivatives was obtained from flight data. The parameter is reported by the solver after convergence, and it is good practice to always plot this quantity out for the surface of the aircraft, both as a histogram and surface contours, before studying lift and drag data.

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