

# **SOME PROBLEMS IN THE ANALYSIS OF STRUCTURES CONTAINING SUSPENDED CABLES**

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## **Abstract**

In this thesis methods of analysis are given which are applicable to three main types of structure, namely, overhead electric transmission lines, guyed masts and suspension bridges. All three have certain basic analytical similarities, and techniques of solution which have proved useful in one application have often also proved useful in one of the others. The work falls naturally into four parts which have been made the subject of separate chapters. For convenience each chapter is made self-contained. In the first a static analysis for overhead electric lines is given, and in the second this is modified for use on guyed masts. Most of the conventional problems on wind, ice, temperature and erection loadings can be easily solved using it.

Chapter 3 describes a precise catenary analysis in a novel form which makes it extremely to use. The final chapter describes some experimental and theoretical work undertaken in an attempt to explain the grossly nonlinear behaviour a vibrating cable can exhibit. Owing to the strong tendency for transverse oscillation in the cables of cable braced structures, considerable trouble is experienced in practice. The analysis given, enable a few of the more simple problems on free oscillations to be solved.