

ABSTRACT

An attempt has been made to develop a numerical method for the calculation of low-speed wing theory problems. The method uses distribution of singularities interior to the body surface and solves the distribution by satisfying the condition of zero normal flow on the body surface. The method is applied to the following incompressible flow problems :

- (i) arbitrary three-dimensional wings with and without deflected control surfaces in steady inviscid irrotational flow.
- (ii) wing-body combination in inviscid flow.
- (iii) three-dimensional wings in steady viscous flow.
- (iv) pitching oscillation of wings in inviscid flow.

Computer programs are developed in FORTRAN IV for all these cases. To check the accuracy of the present internal singularity distribution method a program based on the Hess's method for the case (i) has also been developed. Comparison between the two methods show that the present method is about 2 to 3 times faster than the Hess's method for the same numerical accuracy.