A B S T R A C T

Thin and thick wing theories in steady irrotational inviscid incompressible flow have been studied in this thesis. Problems studied in this thesis include :

i) Thin wings of arbitrary planforms

ii) Thin wings fitted with flaps

iii) Thin wings in side slip

iv) Thin wings with leading edge vortex separation

v) Thick aerofoils and wings

Problems in categories (i) to (iii) are studied by planar Vortex Lattice method[1] and planar Vortex Sheet method developed by the author in this thesis (chapter II & III). Problems in category (iv) are solved by extending the method of Chakraborty and Basu[2] and also by an approximate method developed in this thesis (Chapter IV). Problems in category (iv) are analysed by Boundary Integral Method (Panel Method). Both surface and internal distribution of singularities have been used in developing numerical methods for thick wings (Chapter V).