**Robustness of point vortex equilibria in the vicinity of a Kasper
Wing** RHODRI NELSON, TAKASHI SAKAJO, Department of Mathematics, Kyoto University — The concept of the Kapser Wing was introduced by Witold Kasper
in the early 1970's. His design proposed to add additional "flaps" or auxiliary aerofoils close to the main aerofoil to control the feeding and shedding of vortices in the
vicinity of the wing - the aim being to "trap" a vortex above the main aerofoil thus
resulting in an increased lift being experienced. In this study, equilibira consisting
of a single point vortex in the presence of an idealised Kapser Wing (modelled as
three thin plates) are computed. A background potential flow at an angle attack
$\chi$ to to the main plate is also present. A range of auxiliary plate configurations
is considered and the lift of the system computed. It is seen that the lift experienced by the main plate is "sensitive" to the placement of the auxiliary plates and
can be enhanced in comparison to the single plate case (previously considered by
Saffman and Sheffield, 1977). The linear stability and non-linear time evolution of
the Kasper Wing system is then compared to that of the single plate system. It is
seen that the presence of the auxiliary plates, in general, result in a larger range of
"useful' neutrally stable equilibria (according to linear theory) and and can increase
the non-linear robustness of the system.

Rhodri Nelson
Department of Mathematics, Kyoto University