

Abstract Submitted  
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**Generalizing the Kutta-Joukowski theorem to multiple aerofoils:  
an analytical approach** DARREN CROWDY, Imperial College London — A basic result of inviscid fluid dynamics is the Kutta-Joukowski theorem giving a formula for the lift on a single aerofoil, of arbitrary shape, in a steady streaming flow. What is the generalized result for multiple aerofoils? In the latter case, interference effects between aerofoils render the problem non-trivial both physically and mathematically. The respective lift forces are now delicate functions of the geometry of the aerofoil components and their global spatial configuration. Despite this complication, it turns out that the complex potential for uniform flow past multiple aerofoils, with circulation, can be found in analytical form. This talk will describe a new analytical approach to such problems which generalizes, to the case of an arbitrary finite number of aerofoils, the classical result for biplane (i.e. two) aerofoils due to Lagally (1929). Numerous examples will be given.

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