

Abstract Submitted
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Moment relations for point vortex equilibria HASSAN AREF, Virginia Tech — The analytical solution of the algebraic equations describing relative equilibrium configurations of interacting point vortices appears difficult in general. Even for identical vortices - in which case the configurations in question rotate rigidly - surprisingly little is known analytically about the many configurations found through numerical calculation. Only for very special cases - basically, systems with vortices of the same absolute strength where the configuration is either stationary or translates uniformly - have complete solutions been obtained, and then by quite indirect routes. We discuss a new analytical method that uses moments of the vortex positions and yields particularly simple results for equilibrium configurations consisting of nested regular polygons. A complete determination of all triple-ring equilibria has been given and numerous previously unknown configurations identified. Several equilibria reported in the literature, found by numerical solution, have been characterized analytically.

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