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New exact solutions of the Euler equation: hybrid equilibria of Stuart vortices and point vortices VIKAS KRISHNAMURTHY, MILES WHEELER, University of Vienna, DARREN CROWDY, Imperial College London, ADRIAN CONSTANTIN, University of Vienna — We present a large class of exact solutions to the planar, steady, incompressible Euler equation. These solutions combine the celebrated Stuart vortices with point vortices to form stationary 'hybrid' equilibria. These equilibria consist of a set of point vortices otherwise surrounded by a sea of everywhere smooth Stuart vorticity. The solutions can be deformed continuously and non-trivially by varying a parameter which appears as a simple integration constant in the theory. Various limits of these solutions result in purely point vortex equilibria in otherwise irrotational flow. It is also possible to construct an infinite sequence of such solutions, with increasing numbers of point vortices. In this talk, we will present several examples as well as a brief outline of the general theory.

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