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Gareth E Roberts* (groberts@radius.holycross.edu), **Marshall Hampton** (mhampton@d.umn.edu) and **Manuele Santoprete** (msantoprete@wlu.ca). *Relative Equilibria in the Four-Vortex Problem with Two Pairs of Equal Vorticities*. Preliminary report.

We consider the set of relative equilibria in the four-vortex problem for which two pairs of vortices have equal strength, that is, $\Gamma_1 = \Gamma_2 = 1$ and $\Gamma_3 = \Gamma_4 = m$ where $m \in \mathbb{R} - \{0\}$ is a parameter. Our main result is that for $m > 0$, the convex configurations all contain a line of symmetry, either a rhombus or an isosceles trapezoid. The rhombus family exists for all m but the isosceles trapezoid case exists only for m positive. In fact, an asymmetric convex family exists when $m < 0$. In contrast with the Newtonian 4-body problem, where the main symmetry result stated above is still unproven, the equations in the vortex case are simpler and allow a complete classification of all solutions. (Received September 22, 2011)