1135-70-2364 **Danya Rose*** (danya.rose@sydney.edu.au) and **Holger R Dullin** (holger.dullin@sydney.edu.au). *No absolute partial choreographies of the planar 3-body problem with vanishing angular momentum.* Preliminary report.

The geometric phase of a relative periodic orbit of the planar 3-body problem can be computed from changes in its shape over one period. A periodic orbit is called *absolutely periodic* if its geometric phase vanishes, and it is thus periodic in an inertial frame of reference. A partial choreography of the 3-body problem is also known as a 2-1 choreography, in which two of the bodies trace over the same path in one period, while the third body traces over a separate path twice. That is, a partial choreography requires symmetry under the interchange of two equal masses at every half-period, though this symmetry does not guarantee partial choreography.

We prove a theorem establishing a general symmetry condition for the geometric phase of a relative periodic orbit to vanish when the angular momentum is zero, and use this result to show that if the geometric phase vanishes *and* the orbit has partial choreographic symmetry, it must be self-retracing (in the sense that every particle retraces the same path in both directions), and can only appear as a partial choreography in an appropriately chosen rotating frame. (Received September 26, 2017)