1056-70-972 **Josep Cors**, **Glen R. Hall** and **Gareth E. Roberts*** (`groberts@radius.holycross.edu`), Dept. of Mathematics and Comp. Sci., 1 College Street, College of the Holy Cross, Worcester, MA 01610. *Cyclic Central Configurations in the Four-Body Problem.* Preliminary report.

For the Newtonian 4-body problem, we study the set of convex central configurations that lie on a common circle. Such a configuration will be referred to as a *cyclic central configuration* (ccc). A central configuration is a special choice of positions where the gravitational force on each body is a scalar multiple of that body's position. Such a configuration leads to both homothetic and homographic periodic solutions in the n-body problem. Analytic, numerical and geometric results will be presented. Two symmetric families, the kite and isosceles trapezoid, are investigated extensively. We conjecture that if a ccc exists for a particular choice of masses, then it is unique. (Received September 19, 2009)