1165-37-25 **Mark Edelman*** (edelman@cims.nyu.edu), 6629 Broadway, Apt. 4D, Bronx, NY 10471. *Chaos and asymptotically cyclic sinks in fractional maps.*

Fractional maps can be derived as solutions of equations of periodically kicked systems, similar to the way in which the universal map is derived in regular dynamics, or as solutions of fractional difference equations (fractional difference maps). In either case, the resulting maps have no periodic points except the fixed points, but they have asymptotically periodic sinks. Chaos in discrete fractional systems is a hot topic of research in fractional calculus. In regular dynamics, periodic orbits comprise the skeleton of classical and quantum chaos. The role of periodic orbits in fractional chaos has not been investigated. More than that, the asymptotically periodic solutions of fractional equations have not been found. In this presentation, we derive the equations which define asymptotically periodic cycles of fractional and fractional difference maps. We consider an example and propose a program of investigation of the role which periodic orbits play in fractional chaos. (Received January 07, 2021)