1131-37-137 **Patrick Shipman*** (shipman@math.colostate.edu), 1874 Campus Delivery, Colorado State University, Fort Collins, CO 80523. *Optimally Topologically Transitive Orbits in Two-dimensional Discrete Dynamical Systems.* Preliminary report.

Every orbit of a rigid rotation of a circle by a fixed irrational angle is dense. However, the apparent uniformity of the distribution of iterates after a finite number of iterations appears strikingly different for various choices of a rotation angle. Motivated by this observation, we introduce a scalar function on the orbits of a discrete dynamical system defined on a bounded metric space, called the linear limit density, which we interpret as a measure of an orbit's approach to density. Any discrete dynamical system defined by an orientation-preserving diffeomorphism of the circle has an orbit with a larger linear limit density than any orbit of the rigid rotation by the golden number. We determine linear limit densities of orbits of two-dimensional discrete dynamical systems and random walks. (Received July 11, 2017)