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Scott M LaLonde* (slalonde@uttyler.edu), University of Texas at Tyler, Department of Mathematics, 3900 University Boulevard, Tyler, TX 75799, and **Kassie Archer**. *Investigating Allowed Patterns in Dynamical Systems Using Commuter Functions.*

Given a map $f : [0, 1] \rightarrow [0, 1]$, a permutation $\pi \in \mathcal{S}_n$ is called an *allowed pattern* for f if there exists $x \in [0, 1]$ such that the iterates $x, f(x), f^2(x), \dots, f^{n-1}(x)$ are in the same relative order as the entries of π (when written in one-line notation). Otherwise, we say that π is *forbidden* by f . We will discuss our investigation into the allowed and forbidden patterns for the family of symmetric tent maps $T_\mu : [0, 1] \rightarrow [0, 1]$, where $1/2 < \mu \leq 1$. One can build a relationship between the allowed patterns of two different tent maps using *commuter functions*, which result from relaxing the notion of topological conjugacy between dynamical systems. In particular, if a commuter is strictly increasing (i.e., order preserving), then it maps allowed patterns of one dynamical system to allowed patterns of the other. We will discuss several results in this realm, along with some open questions regarding forbidden patterns and certain properties of commuter functions. (Received September 25, 2018)