

Quasiperiodically forced circle maps

Quasiperiodic forced circle maps have been studied as an extension of circle maps. A common approach to understand its dynamics are rotation numbers.

For invertible quasiperiodic forced circle maps there is a single rotation number and a reasonable approximation can be obtained simply by iteration. This does not hold true for non-invertible maps where a set of rotation numbers is possible, depending not only on the parameters but on the choice of initial conditions. For a given map, this set is known to be a closed interval which can be approximated through an associated family of invertible maps.

Rotation intervals are important because their presence is related to chaotic dynamics.

We looked at the shape and length of rotation intervals for large forcing parameters. This led to an prediction of rotation intervals which discards the iterative process and provides an accurate description of rotation intervals.