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Dense orbits, periodic orbits and nontrivial paths of fractal billiard tables

In this talk, we will present examples of sequences of compatible periodic orbits of prefractal billiard tables. In particular, we will demonstrate the existence of such sequences for the Koch snowflake fractal billiard table, a self-similar Sierpinski carpet billiard table and the T-fractal billiard table. In each case, we will see that certain sequences of compatible periodic orbits exhibit interesting dynamical behavior and, in some cases, converge to periodic orbits. We will close by providing possible approaches to determining a wider class of recurrent orbits in each fractal billiard table and provide experimental evidence in support of the existence of 1) periodic orbits of fractal billiard tables and 2) dense orbits of fractal billiard tables. The material presented will be summarizing separate joint projects with M. L. Lapidus, R. L. Miller. and J. P. Chen.