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*billiards obtuse and irrational*

The triangular billiards problem, which goes back 200 years, asks if every triangular-shaped billiard table has a periodic billiard path. The answer is known to be yes for acute triangles, right triangles, and triangles with angles that are rational multiples of  $\pi$ . For several years, Pat Hooper and I have been developing a computer interface, McBilliards, which explores the existence of periodic billiard paths in triangles. In my talk I will illustrate McBilliards and summarize some of the theorems we have proved, based on experimental output from McBilliards. I hope to also illustrate some self-similarity phenomena in the parameter space, and its connection to Fourier series and Veech surfaces.