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Laura DeMarco* (demarco@math.uic.edu), Department of Mathematics, University of Illinois at Chicago, 851 S Morgan St (M/C 249), Chicago, IL 60607. *The conformal geometry of billiards.*

A billiard trajectory on a rectangular table obeys a simple rule: it is either periodic or it covers the table uniformly, exactly as for straight lines on a torus. The study of billiard trajectories on other polygonal tables has led to striking connections with the conformal geometry of Riemann surfaces, the Teichmüller geometry of moduli space, and arithmetic properties of associated dynamical systems. I will explain some recent results in these directions. (Received September 22, 2009)