1131-37-116 **Vladimir Dragovic*** (vladimir.dragovic@utdallas.edu), The University of Texas at Dallas, 800 W. Campbell Road, FO 35, Richardson, TX 75080. *Pseudo-integrable billiards and their topological, dynamical, and arithmetic properties.*

We present a recent class of billiard systems in the plane, with boundaries formed by finitely many arcs of confocal conics such that they contain some reflex angles. Fundamental dynamical, topological, geometric, and arithmetic properties of such billiards are studied. The novelty, caused by reflex angles on boundary, induces invariant leaves of higher genera and dynamical behavior different from Liouville–Arnold's Theorem. The billiard flow generates a measurable foliation defined by a closed 1-form w. Using the closed form, a transformation of the given billiard table to a rectangular cylinder is constructed and a trajectory equivalence between corresponding billiards has been established. A local version of Poncelet Theorem is formulated and necessary algebro-geometric conditions for periodicity are presented. It is proved that the dynamics depends on arithmetic of rotation numbers, but not on geometry of a confocal pencil. Examples of billiard trajectories having a fixed circle concentric with the boundary semicircles as the caustic, such that the rotation numbers with respect to the half-circles are different pairs of numbers r1 and r2 respectively, are presented. This presentation is based on joint works with Milena Radnovic. (Received July 09, 2017)