

Alexander Grigo (Georgia Tech). *Defocusing fails for non-absolutely focusing components.*

Abstract. As is well known since the 1970's, dispersing and defocusing are the two mechanisms leading to hyperbolic behavior in billiards. Following these results, using special geometries of the tables, general recipes to construct hyperbolic billiards with dispersing and focusing boundary components were suggested, which essentially reduce to placing all other components sufficiently far away from any focusing pieces. In this talk we show that whenever a non-absolutely focusing boundary segment is used, these general strategies do not always result in hyperbolic tables. In fact, we show how this can lead to tables with stable periodic orbits of arbitrary long free paths. As a result of this, existing method of constructing hyperbolic billiards with focusing components must be restricted to absolutely focusing ones.

This is a joint work with Leonid Bunimovich.