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Jon Chaika and **Giovanni Forni*** (gforni@umd.edu). *Weakly Mixing Polygonal Billiards.*

I will present an outline of the proof, joint with J. Chaika, that the set of planar polygons with weakly mixing billiard flow (on the 3-dimensional phase space) is a dense (G-delta) set. The proof is based on the following ingredients: 1) an approximation argument, reminiscent of Kerckhoff, Masur and Smillie 1986 proof of ergodicity, which reduces the result to a statement on translation surfaces; 2) elimination of eigenvalues of translations flows along the lines of the work of W. Veech and A. Avila and myself, and 3) results of Chaika and Eskin on the Oseledets theorem for arbitrary translation surfaces in moduli space, based in turn on the work of Eskin, Mirzakhani and Mohammadi. The main technical step in the proof is a large deviation estimate for the top non-trivial Lyapunov exponent of the so-called Kontsevich–Zorich cocycle along any Teichmueller horocycle arc. The main novelty is in a substantial simplification in the elimination mechanism. (Received January 22, 2022)