1077-37-1460   **Jianyu Chen*** (`j_chen@math.psu.edu`), 723 W Cherry Ln Apt 1, State College, PA 16803, and **Huyi Hu** and **Yakov Pesin**. *A KAM phenomenon for volume-preserving flows.*

The persistence of invariant tori is not only common in Hamiltonian systems, but also in the volume-preserving systems. Outside those so-called "elliptic islands" , it is very possible that there is a "chaotic sea" with (nonuniformly) completely hyperbolic behavior. There are already several examples with this phenomenon in the category of volume-preserving diffeomorphisms. I shall present a volume-preserving flow of this type. More precisely, the flow is ergodic and has nonzero Lyapunov exponents on an open dense subset of not full measure, and has zero exponents on the complement consisting of codimension-2 invariant submanifolds. Moreover, the flow is indeed just a linear flow when restricted on each invariant submanifold. (Received September 19, 2011)