

Abstract: We prove that there is an open and dense set in the C^2 topology of Riemannian metrics on the 2-sphere whose geodesic flow has an elliptic closed geodesic.

This result recovers, in a generic sense, a theorem by H. Poincaré 1904 and proves a conjecture by Michel Herman 2000. The proof combines techniques in symplectic dynamical systems (stable hyperbolicity) and contact geometry.