Vsevolod Shevchishin (U Olsztyn):

Lagrangian tori and exceptional symplectic spheres in symplectic 4-manifolds

The goal of my talk is to give an outline of the proof of the following theorem. Let (X, ω) be a compact symplectic 4-manifold, $L \subset X$ a Lagrangian torus, and $E_0 \subset X$ an exceptional symplectic sphere, i.e., a symplectically embedded sphere of self-intersection -1. Then there exists an exceptional symplectic sphere E symplectically isotopic to E_0 which is disjoint from the torus L. In particular, E can be symplectically contracted in X.

The techniques used in the proof are based on the analysis of the symplectic neck stretching of X along the Lagrangian torus L, or more precisely a symplectic stretching of the annular layer in a symplectic tubular neighbourhood of L.