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The Existence of Hamiltonian Stationary Lagrangians

Hamiltonian stationary Lagrangians are Lagrangian submanifolds that are critical points of the area functional under Hamiltonian deformations. They can be considered as a generalization of special Lagrangians or Lagrangian and minimal submanifolds. In a joint work with Joyce and Schoen, we showed that given any compact rigid Hamiltonian stationary Lagrangian in \mathbb{C}^n , one can always find a family of Hamiltonian stationary Lagrangians of the same type in any compact symplectic manifolds with a compatible metric. However, one does not know whether the examples in this family are close to each other. In a subsequent paper, I derive a local condition in n -dimensional Kähler manifolds which guarantees the existence of one smooth family of embedded Hamiltonian stationary tori near such points and the Hamiltonian stationary tori do not intersect each other. I will report and explain these results in this talk.