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The Geography of Lagrangian Cobordisms

In topology, cobordisms define a fundamental equivalence relation on the set of compact manifolds: two compact, n -dimensional manifolds are cobordant if their disjoint union is the boundary of an $(n+1)$ -dimensional manifold. I will discuss cobordisms that satisfy extra geometrical conditions imposed by symplectic and contact structures. Namely, I will discuss Lagrangian cobordisms between Legendrian manifolds. In contrast to the smooth setting, this cobordism relation no longer defines an equivalence relation on the set of Legendrian submanifolds. There are numerous interesting “geography” questions about the existence of Lagrangian cobordisms. I will discuss some obstructions to and constructions of Lagrangian cobordisms that give some geographic information.