Floer homology and the free loop space

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Abstract

Floer Homology for symplectic fixed points is formulated in the context of a variational problem on the free loop space. Whereas is first prime application in terms of the Arnold cojecture made no use of the full structure of the free loop space, recent developments have found an increasing amount of free loop space structure in the framework of Floer homology. Examples are the pair-of-pants ring structure as equivalent to the Chas-Sullivan loop product in the context of cotangent bundles, as well as versions of equivariant homology with respect to the S^1 action on the loop space.