# Hofer's metrics and boundary depth

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We show that if (M,\omega) is a closed symplectic manifold which admits a nontrivial Hamiltonian vector field all of whose contractible closed orbits are constant, then Hofer's metric on the group of Hamiltonian diffeomorphisms of (M,\omega) has infinite diameter, and indeed admits infinite-dimensional quasi-isometrically embedded normed vector spaces. A similar conclusion applies to Hofer's metric on various spaces of Lagrangian submanifolds, including those Hamiltonian-isotopic to the diagonal in M x M when M satisfies the above dynamical condition. To prove this, we use the properties of a Floer-theoretic quantity called the boundary depth, which measures the nontriviality of the boundary operator on the Floer complex in a way that encodes robust symplectic-topological information.

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