

## On generalizations of Eliashberg-Gromov's theorem

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**Abstract.** Symplectic structure on a smooth manifold is given by a differential 2-form that is closed and non-degenerate. A famous theorem of Y. Eliashberg and M. Gromov [1] states that the group of diffeomorphisms which preserve a given symplectic structure (i.e. the symplectomorphisms group) forms a closed subset inside the group of all diffeomorphisms equipped with the compact-open topology. This theorem had a major impact on developing of symplectic geometry, that even V. I. Arnold in [2] referred to it as the “existence theorem of symplectic geometry”.

In this talk we will try to emphasize that non-degeneracy is not necessary for obtaining  $C^0$  rigidity in the above sense. In that direction, we will prove Eliashberg-Gromov's  $C^0$  rigidity for Poisson manifolds [4]. More precisely, we will prove that the group of Poisson diffeomorphisms forms a closed subset inside the group of all diffeomorphisms equipped with the compact-open topology. The proof relies on the Poisson version of the energy-capacity inequality [3].

If time permits we will discuss other possible generalizations of Eliashberg-Gromov's rigidity.

**Keywords:** symplectic diffeomorphism;  $C^0$  rigidity; Poisson diffeomorphism; energy-capacity inequality.

### References

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