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Lagrangian link quasimorphisms and the non-simplicity of Homeomorphism group of surfaces

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In this talk, we will explain the construction of a sequence of homogeneous quasi-morphisms of the area-preserving homeomorphism group of the sphere using Lagrangian Floer theory for links. This sequence of quasi-morphisms has asymptotically vanishing defects, so it is asymptotically a homomorphism. It enables us to show that the Homeomorphism group is not the smallest normal subgroup of the area-preserving homeomorphism group.

If time permits, we will explain how to generalize it to all positive genus surfaces even though we no longer have quasi-morphisms.

The case of the sphere is joint work with Daniel Cristofaro-Gardiner, Vincent Humilière, Sobhan Seyfaddini, and Ivan Smith. The case of positive genus surfaces is joint work with Ibrahim Trifa.

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