Persistent properties from Gromov-Hausdorff Viewpoint

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In this talk, we introduce topologically IGH-stable, IGH-persistent, average IGH-persistent and pointwise weakly topologically IGH-stable homeomorphisms of compact metric spaces. We will prove that every topologically IGH-stable homeomorphism is topologically stable as well as topologically GH-stable and every expansive topologically stable homeomorphism of a compact manifold is topologically IGH-stable. We further prove that every equicontinuous pointwise weakly topologically IGH-stable homeomorphism is IGH-persistent and every pointwise minimally expansive IGH-persistent homeomorphism is pointwise weakly topologically IGH-stable. Finally, we prove that every mean equicontinuous pointwise weakly topologically IGH-stable homeomorphism is average IGH-persistent. These results strengthen the well known Walters' stability theorem from the viewpoint of pointwise dynamics as well establish the relation between persistent properties and topological stability from the Gromov-Hausdorff viewpoint.

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