

# **A topological version of the normally hyperbolic invariant manifold theory**

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## **Abstract**

Normally hyperbolic invariant manifold theory deals with persistence results of invariant structures under perturbations. In the talk we will discuss a topological reformulation of the theory, which allows us to extend the results to an earlier unattainable setting. We consider perturbations of normally hyperbolic invariant manifolds, under which they can lose their hyperbolic properties. We show that if the perturbed map which drives the dynamical system preserves the properties of topological expansion and contraction, then the manifold is perturbed to an invariant set. The main feature is that our results do not require the ‘rate conditions’ to hold after the perturbation. In this case the manifold can be perturbed to an invariant set, which is not a topological manifold.