

Topological Obstructions for Sobolev Spaces

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We will delve into various aspects of topological obstructions within the framework of Sobolev spaces. To illustrate fundamental principles, we will initially explore a Sobolev adaptation of the Brouwer Fixed Point theorem. This exploration will naturally lead us to considerations regarding the definition of degree for Sobolev maps between manifolds. Subsequently, we will examine Sobolev maps with restricted rank, alongside examples illustrating topological obstructions encountered in the approximation or extension of Sobolev maps such as homeomorphisms. It is assumed that participants are acquainted with the theory of Sobolev spaces in Euclidean contexts. Any topological concept will be carefully defined throughout the course.