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**Inverse problems in topological persistence.** (English) Zbl 1447.55006

Baas, Nils (ed.) et al., Topological data analysis. Proceedings of the Abel symposium 2018, Geiranger, Norway, June 4–8, 2018. Cham: Springer. Abel Symp. 15, 405–433 (2020).

**Summary:** In this survey, we review the literature on inverse problems in topological persistence theory. The first half of the survey is concerned with the question of surjectivity, i.e. the existence of right inverses, and the second half focuses on injectivity, i.e. left inverses. Throughout, we highlight the tools and theorems that underlie these advances, and direct the reader's attention to open problems, both theoretical and applied.

For the entire collection see [[Zbl 1448.62008](#)].

**MSC:**

- [55N31](#) Persistent homology and applications, topological data analysis
- [55-02](#) Research exposition (monographs, survey articles) pertaining to algebraic topology
- [68T09](#) Computational aspects of data analysis and big data
- [62R07](#) Statistical aspects of big data and data science

**Keywords:**

[machine learning](#); [extraction](#); [persistent homology](#); [topological data analysis](#); [survey](#); [barcode](#); [stability](#); [inverses](#); [point cloud](#); [transform](#)

**Software:**

[GitHub](#)

**Full Text:** [DOI](#)

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