

Validation and Verification of Computational Homology for Random Fields

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Algebraic Topology is an important tool to help aid the study of pattern formation. Topological measurements can give valuable information about the structure of the patterns formed. In particular, Computational Homology can give information about the number of connected components and holes in the patterns formed. However, many questions still need to be resolved. In particular, for systems with any randomness, can we get a priori estimates on the number of sub-divisions needed to ensure the homology is computed correctly? In this talk, I will discuss this issue and compare it to a method of validating the homology computations.